future
architecture of
corporations
tax
system

Ministry
of
Revenue

Ontario

F.A.C.T.S.
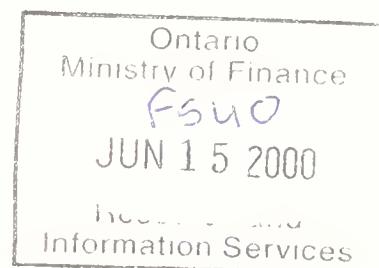
Future Architecture

of the

Corporations Tax

System

Final Report

Volume 1 of 2

June 30th, 1979
Planning Project: CT 144

Corporations Tax Branch
Management Systems Branch
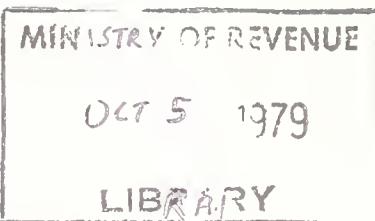
Ministry Corporations
of Tax Branch
Revenue
Ontario

Queen's Park
Toronto, Ontario
M7A 1Y1

416/965- 1416

Refer to: D.P. Edwards

Date: September 28, 1979

MEMO TO: Revenue Library

Please find delivered with this memo, your copy of
the FACTS Report which is being released today.

It should be noted that the Implementation Strategy,
Section 6.0, provides a general approach to imple-
menting the recommendations. This has received the
approval of the FACTS Steering Committee.

Planning officers will now be allocated to prepare
detailed cost benefit analysis for these recommenda-
tions, in order that future E.D.P. Investment dollars
are spent in areas where the greatest benefits can be
achieved.

The FACTS Report should provide guidance, and be used
as a vehicle to plan future developments for the
Corporations Tax Branch.

D.P. Edwards
Manager, Planning

DPE/nep

Attached

DISTRIBUTION:

CORPORATIONS TAX BRANCH	MANAGEMENT SYSTEMS BRANCH	MINISTRY
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Accounts
Audit
Collections
Tax Roll

**Ministry
of
Revenue**

Ontario

Queen's Park
Toronto, Ontario
M7A 1X8

Date: September 12th, 1979.

Memorandum To: FACTS Steering Committee.

From: P.A. Barnard,
                               Project Manager (FACTS).

Subject: FACTS Report.

On behalf of the FACTS project team I am pleased to submit
the results of the FACTS study.   The scope and extent of
the project has necessitated the splitting of the report
into two volumes for convenience of reference.   Volume I
contains Sections 1 to 6, while Volume II contains the
detailed alternative approaches to the major functions of
Corporations Tax Branch that constitute Section 7.

I wish to take this opportunity to thank the management of
the Corporations Tax Branch and the Management Systems
Branch for the support and co-operation given to the FACTS
project.   In particular I wish to acknowledge the con-
tributions of the following staff:-

from Corporations Tax Branch:-

C. Amodeo	P.L. Rust	N.V. Hueston
K.S. Bone	W.F. Corrick	A.D. Ireland
M.N. Gomes	D.W. Cowlin	M. Kalm
R.E. Hedmann	D.P. Edwards	G. Stanbridge
L. Heller	M. Fulford	C.H. Townsend
R.D. McAuley	W.A. Holloway	P. Van Brugge

from Management Systems Branch:-

W.J. Baxter	C.R. Lopes	W.H. Russell
D.A. Dickson	F.R. Palmer	

Finally, I wish to recognise the dedicated efforts of the
members of the project team who were full-time on the final
stages of the report:-

E.V. Bienstock, J.M. Kabot, and K. McNeil.

I am glad to have had the opportunity to act as project
manager on such an important project for Corporations Tax
Branch as FACTS.

Peter Barnard.

JDB

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VOLUME 1

VOLUME 11

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INTRODUCTION

Authority

Authorization for this study is contained in correspondence dated May 31, 1978, from C. H. Townsend, Director, Corporations Tax Branch, to D. P. Edwards, Manager of Planning, Corporations Tax Branch.

During the various stages of the study, the project team consisted of a project manager and a planning specialist from the Planning Section of Management Systems Branch, senior planning representatives from the Planning Section of Corporations Tax Branch, and a senior supervisor from the Administration area of Corporations Tax Branch.

Objective of FACTS

The objective of the FACTS study is to produce and
document a systems development plan spanning five (5)
years for the Corporations Tax Branch, which will guide
the phased application of enhanced technology to the
overall activities of the Branch.

Scope of Study

The scope of this study is structured around the following activities:

 (i)   gathering information concerning the present and future operating environment by consulting existing literature, conducting a series of interviews with Corporations Tax and Management Systems Branch management, and meeting with representatives from external agencies familiar with technology trends;

 (ii) analyzing information obtained to determine problem areas which may be addressed through further automation;

 (iii) producing an interim report which outlines characteristics of the Corporations Tax environment and highlights areas of concern;

 (iv) considering alternative solutions to problems through cost/benefit analysis; and

 (v)   producing a final report which specifies recommendations and an implementation strategy.

Terms of Reference

The terms of reference for this study are contained in
a request for services dated May 31, 1978. They are as
follows:

    (i)   to determine the environment within which
           Corporations Tax Branch will operate for the
           next five years;

   (ii)   to evaluate the current automated system with
           emphasis on its effectiveness in the present
           environment and adaptability to short term
           and long term needs;

  (iii)   to investigate the technology applicable to
           the Corporations Tax environment that will be
           available in the next few years; and

   (iv)   to investigate how Corporations Tax will
           interface with other branches and agencies.

Assumptions

In conducting this study the following assumptions were made:

(i)   the objectives of the Corporations Tax Branch are generally outlined in the results of the structured planning session held in February, 1979.

(ii)   government constraint policies will continue to restrict the availability of manual resources needed to cope with the increasing workloads in the Corporations Tax Branch;

(iii)   the Corporations Tax tax roll will continue to grow at a rate similar to that established in the past few years;

(iv)   the taxpayer requirements under the Corporations Tax Act will remain essentially the same as they are at present;

(v)   the Revenue Division will pursue a policy of rationalizing common functions within the Division, where applicable;

(vi)   the Corporation Tax computer systems will continue to operate for the most part within the hardware and software policies supported by the Communications and Computer Services Division of the Ministry of Government Services; and

(vii)   the Ministry will move to Oshawa as planned within the five year period.

Background

The intent of the FACTS study is better understood by
briefly reviewing the history of automation in the
Corporations Tax Branch.

Computer technology was first introduced to the
Corporations Tax Branch in 1965 and during the next few
years an effort was made to utilize the computer to
support most processing functions within the Branch.
By 1970, tax roll maintenance, returns processing,
application of remittances and journals, billing of
returns, collection and default followup, and audit
selection functions were automated to varying degrees.
The computer system proved effective in coping with
increasing workloads and offset the need to increase
staff in proportion to the growth of the tax roll.
Between 1965 and 1970 the active tax roll increased
from 65,000 to over 100,000, an increase of 54%, while
the number of employees in the Branch increased from
200 to 240, an increase of 20%. In addition,
processing within the Branch was being maintained at a
current level.

In an effort to further enhance the computer system
support of Branch operations, a feasibility study was
conducted in 1970 to evaluate the implementation of an
on-line information retrieval system using display
terminals. This facility was to provide immediate
access to individual account information on the
computer files and reduce the demand for hard copy file
information by all operational sections.
Implementation of the proposed retrieval system was
delayed at this time however since the Ministry was in

the process of relocating its computer systems to the Ministry of Transportation and Communications data centre at Downsview, and the only technology available for such a system was relatively new and restrictive in its data communication capabilities.

During this time it became apparent that a long range plan for further automation in the Branch was necessary. Changes to the existing computer programs were becoming cumbersome and expensive to implement. Some functions were in need of review from the user viewpoint. The batch processing characteristics of the existing system could not easily accommodate the future needs of the Corporation Tax Branch. More frequent updating of the computer files could not be accomplished economically as long as file scanning activities and transaction driven functions were coupled together in the computer run. The weekly update restrictions contributed to the already high volume of paper outputs from the system and the proposed retrieval system could not be accommodated without creating additional files on direct access storage devices.

A framework study projecting computer development for the next three to five years was completed in late 1972, and by this time the active tax roll had increased to nearly 119,000 corporations, and the staff employed in the Branch had risen to 275. The study recommended that the Corporations Tax system be converted to data base technology and be redesigned to ensure independence of processing functions, particularly the separation of transaction driven and file scanning functions. An immediate priority was the need to provide an on-line information retrieval capability.

The first information retrieval system was implemented in early 1973. It provided immediate access to selected information for individual accounts via CRT terminals under the control of TSO (Time Sharing Option). The disk files for the retrieval system were located at the Ministry of Transportation and Communications and were created each week from the updated tape master file, which was processed at the Ministry of Education data centre. The TSO retrieval system was implemented as an interim measure to meet the immediate information needs of the Corporations Tax Branch, while the longer term objective was to consolidate all Corporations Tax processing into a data base system using IMS (Information Management System).

In July, 1974 the TSO retrieval system was discontinued and replaced by IMS. Processing was still divided between two data centres and the data base file, used only for information retrieval, was updated with changes extracted from the weekly update of the tape master file. The data base contained only partial master file information, but by now played an essential role in the Branch processing which was servicing over 130,000 active accounts with a staff of 286. The number of taxpayers had doubled since the 1965 level while staff had increased by 43%.

During 1975 and early 1976 the effort to consolidate all processing into the IMS data base environment was delayed due to organizational changes within the Corporations Tax Branch and the commitment of EDP resources within the Management Systems Branch to newly legislated rebate programmes. Activities were limited to enhancement of the existing retrieval system

(which included making more data available through the display terminals and the implementation of a KWIC (Key Word In Context) name search facility) and normal maintenance of the update and statistical batch programs. The effects of delay in further development of the system and government constraint policies resulted in work backlogs in the Assessment area of Corporations Tax Branch in 1976. The active tax roll was in excess of 150,000 accounts while staff had been reduced to 277. At the same time, the complexity of the Corporations Tax Act had increased greatly with the introduction of many business incentive measures and the monolithic program logic in the batch processing system had become increasingly difficult to maintain.

During the latter half of 1976, planning was undertaken to consolidate the tape batch processing portions of the computer system into the data base environment. Development commenced early in 1977 and by mid-summer the weekly update and monthly statistical programs were converted to process against a redesigned IMS data base containing all information previously on the tape master file. The information retrieval system was also enhanced to make all information on the data base available through the display terminals. During the last part of the 1977-1978 fiscal year the weekly update programs were completely restructured in a manner which decreased the inter-dependency of processing functions. During this development the tax roll continued to grow so that by the end of the 1977-1978 fiscal year the number of active corporations was nearly 185,000 and the number of staff had risen to 315.

During early 1979 a key to disk data entry system was introduced into Corporations Tax Branch allowing initial editing to occur at entry time and reducing verification effort. Later the centralized Data Entry function was transferred to another branch as part of the functionalization process. Optical character recognition equipment was also introduced into the Remittance Processing Centre as a means of capturing remittance data, and word processing equipment was installed as a measure to reduce repetitive typing effort.

At present the active tax roll has grown to over 220,000 and the pressure to increase staff is growing. In light of the 1977 studies conducted by the Revenue Division to determine divisional policies and objectives over the next five years, the future workload projections for the Branch, and the potential for improvement in procedures offered by the present computer system and other available technologies, the management of the Corporations Tax Branch initiated the FACTS study which commenced in late 1978.

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1.0 Executive Summary

The intent of this section is to present a synopsis of the
FACTS project stages, the findings of the problem analysis
stage, an overview of conclusions drawn, the theme of the
recommendations, and finally a summary of the benefits
arising from the plan.

1.1 Summary of Stages

The Corporations Tax computer system had been converted
entirely to an Information Management System (IMS) data
base structure by early 1978. An opportunity was now
presented to capitalize on the benefits offered by the
relatively advanced technology of the computer system
since, during the conversion project, no attempt had been
made to further complicate the efforts by introducing
operational enhancements that were now possible in the IMS
computer system environment. It was deliberate policy to
postpone such operational enhancements, except for more
comprehensive terminal formats, until after the successful
implementation of the data base system which was designed
to be "transparent" to the operational environment.

Such was the origin of the Future Architecture of the
Corporations Tax System (F.A.C.T.S.) study; a subsequent
project to the conversion effort which was to formulate a
plan for the future system of the Corporations Tax Branch.

Phases of FACTS

FACTS was divided into two main phases from the outset: an
analysis of the current operational environment and
presentation of the operational problems of the system,
which was to be published as an Interim Report (and now
consistutes sections 2.0 and 3.0 of this final report); and
secondly, a review of alternative solutions together with a
comprehensive series of recommendations that would comprise
a development plan past the period of relocation to Oshawa.

Initially a programme of interviews was conducted with
managers and supervisors of the Corporations Tax Branch,
and with senior members of the Management Systems Branch,
to determine the main characteristics and underlying
problems of the system. The findings of this phase were
published in March, 1979.

Secondly, a more complicated phase was undertaken that
examined the root problem of increasing workload and the
multiple manifestations of its effects in the diversified
operating environment of the Corporations Tax Branch, and
attempted, by the application of new technology or an
improved utilization of existing technology, to propose
solutions to the work place problems that had evolved.

The aims of this phase were multiple:

. to promote shorter unit of work cycles by emphasizing
  increased staff machine interaction;

. to examine the requirements and effects of such a
  policy;

. to simplify as much as possible the steps in the routine
  manual procedures by reducing fragmentation of work
  flows;

. to pursue further a considered management by exception
  approach to the huge volumes of paper processing, by
  promoting additional complementary automation techniques
  in an atmosphere of deliberate internal policy rather
  than under the pressure of external circumstances;

. finally, to provide the management of Corporations Tax
  Branch with an automated management information support
  system to assist in the future decision making process.

Planning Session

As an aid in preparing for the second phase, a planning session was held over a total of three days in February and March 1979 at which a cursory look was given to the mission and objectives of the Branch functions and alternative approaches to overcoming obstacles. The session was conducted by a third party and comprised the Director of Corporations Tax Branch, together with senior members of the Corporations Tax Planning Section, and the Director and some senior members of Management Systems Branch. The session was recorded on paper, later published, and acted as a very useful tool in determining the views of the senior management of the Branches.

Revenue Division Tax Model

The structure of many of the sections of the FACTS report is based on the "Tax Model" adopted at the Revenue Division level for categorization of the major functions. The main categories addressed in this report are those of Revenue Generation, Revenue Control, Support, Appeals, Feedback, and Management Administration.

Each of the categories was broken into major functions and each function into its primary processes. These processes were then examined in a step-by-step approach with a view to specifying alternative procedures or methods that would meet the objectives of the Branch while obviating the most serious problems associated with that function.

1.2 Findings of the FACTS study

Sections 2 and 3 of this report contain the detailed
findings of the analysis stage. Section 2 primarily states
the workload situations in the operational areas of
Corporations Tax Branch and examines the entire operation.
Section 3 highlights the problems associated with both of
these aspects of the Corporations Tax system.

The Operational Environment

The problems faced by the operational areas all revolve
around the accelerating increase, in absolute volumes, in
the size of the tax roll, together with the overall policy
of the Government of Ontario of constraining increases in
complement.

The manual procedures that are in effect are to a large
degree applied equally to all accounts and there are few
attempts to operate selectively in the operational
environment. Instances of this homogeneous treatment of
all accounts appear in the Tax Return Centre where each
return, irrespective of its taxable value, is subjected to
a complete dressing and screening operation and are
manually scored for future audit selection purposes. In
effect the auditors in the Tax Return Centre are being used
to segregate returns manually so that maximum benefit can
accrue later at the extended audit stage, but by applying a
judgemental decision in each case they inevitably impede
fast throughput of the return acceptance process.

On the other hand, where the identical treatment of all
accounts had caused a major backlog of work in the
compliance area and had forced a selective approach to the
workload, application of the concept was mostly reactive
and not comprehensive in the total system environment. The
selective treatment of accounts was applied only at the
manual level without complementary computer support. It
was not a total plan. The volume of collection worksheets
produced still absorbs valuable man hours in selecting
those required for manual followup.

The analysis of the operational areas also highlighted the inherent service nature of two functions within the Corporations Tax Branch whose continued operation therefore become questionable in light of the poicy of constraint and maximum return for staff investment. They are the Liens function of Revenue Control and Financial Data Analysis operation. Both are heavily labour intensive and little can be done to improve the efficiency of their operations by introducing new techniques or equipment. The elimination of these services would have little, if any, adverse affect on the total performance of the Branch but would allow greater flexibiliy in dealing with those operational areas essential to the welfare of the Corporations Tax Branch.

Also evident in the analysis process was the high percentage of staff time absorbed by the requirements of the management reporting system. MBR results are gathered, assembled, manipulated, updated and printed manually. There is no facility at present to collect automatically these vital performance data for managment and to present the information in a timely manner.

The Processing Environment

The findings of Section 3 confirm the suspicions that some obsolete concepts exist within the processing environment supporting the Corporations Tax system. Examples of this appear in the storage policies of the 12 year old computer design when both return and assessment information is overwritten and removed from the system when amendedments are received for the same tax period. However more important to the overall efficiency of the Branch are the restrictions imposed by the batch scheduling cycles of the processing environment and the ensuing centralized nature of the data entry support function. The conversion to data base technology offered opportunity to supplant the dependency of the scheduled production runs with a computer support system responsive to operational requirements.

Trend Research

To assess realistically the improvments that could be
applied to the processing environment a study was made of
those aspects of advanced automation and technology that
might be applicable to Corporations Tax Branch. Section 4
outlines the trends and discovers the move towards a closer
working relationship between end user and the computer, the
importance of data management and retrieval capability, the
increasing availability of computer power at the work place
and the extensive interest in management information aids
of an automated nature. The costs of data processing will
reduce on a per unit basis but total expenditures will
increase as workload is transferred from a manual to a
computer orientation.

1.3 Summary of Recommendations

It is recognized that the Corporations Tax system is already highly automated and that advances in this area will centre around further reduction in labour intensity by the integration of automation into the manual procedures.

Major Conclusions

The conclusions reached after the analysis and trend research stages suggested that, to achieve this objective, attention must be concentrated in the following areas:

- that the data capture requirements must be eased to accommodate the increasing workloads in the Branch;

- that the paper flows associated with the batch nature of the system must be reduced;

- that the processing cycle times must become more flexible and responsive to the requirements of individual units of work;

- that, where possible, individual units of work should be completed in a single action without generating the need for additional support function activities;

- that data transcription must be eliminated at every opportunity;

- that management information must be gathered more automatically

- and, that correspondence to taxpayers must be made more understandable to reduce the uncertainty and resulting inquiries back to the Corporations Tax Branch.

Recommendations

Section 5 presents a comprehensive series of
recommendations for both the operational and computer
system environments, and examines the effects of these
recommendations from the viewpoints of differenct facets of
the Branch, including legislation, organization, policy,
training and interaction with other agencies. Section 7
acts almost as an appendix to the study and details the
alternative approaches to the main individual functions
before concluding with a recommended approach. These
recommendations are then integrated in Section 5.

The essence of the recommendations can be summarized as
follows:

. that extensive use be made of the on-line system to
  transform part of the data capture process into a data
  entry at source operation, and to update the data base
  immediately in one integral unit of work without
  recourse to the peripheral support activities of the
  Input/Output section, Data Entry, and the Word
  Processing Centre;

. that a selective approach be implemented to manual
  processing activity, complemented by a computer system
  adapted to the principles of manual processing by
  exception: instances of this appear in the Returns
  Processing and Compliance recommendations that not all
  accounts be treated in a uniform way;

. that adherence to the principles of the self-assessing
  system be reinforced in the procedures;

- that the government-wide policy of constraint be acknowledged in the re-affirmation of the prime roles of the major functions within Corporations Tax Branch and that future efforts be concentrated in these areas through the elimination, or accommodation in other ways, of non essential functions currently performed by the Branch;

- and, that management information be made available as a by-product of work done rather than as a task per se.

1.4 Summary of Benefits

The FACTS study offers a comprehensive plan within the framework of which Corporations Tax Branch can carry out its responsibilities in a progressive and planned manner. It presents a proactive approach to the inevitability of increasing workloads in an atmosphere of personnel and expenditure constraints. The main thrust of the recommendations is to improve the productivity of existing staff by a variety of means and Section 6 outlines a series of sixty-seven projects that will achieve that objective while increasing job satisfaction and boosting staff morale. The list of projects to be undertaken provides a basis for assigning funds for investment in EDP and offers an oportunity for a phased approach to system development before and after relocation in Oshawa.

Most importantly, FACTS provides a plan that can be adhered to throughout the normal divergent influences of budget and relocation considerations and that demonstrates, in its comprehensiveness, the synergism of the total concept.

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2.0 CHARACTERISTICS OF THE ENVIRONMENT

2.1 Policy Environment

Determination of a plan, to establish the orderly
application of further automation techniques to the
operating environment of the Corporations Tax Branch must
take into consideration the long term policies and
objectives of the Revenue Division. A report, titled "Goals
and Objectives for the Revenue Division - A Five Year
Development Plan", was published in November, 1977. This
study was the first in a series of continuing strategic
planning efforts at the Divisional level, and established a
number of principles and objectives for the orderly repair
and further development of the Ministry's tax systems over a
five year period ending in 1982. The following section
outlines the priority objectives, and the measures to
achieve those objectives, laid down in the Revenue Division
report, since they will have a significant effect on the
future development of the Corporations Tax Branch systems.

2.1.1   Revenue Division Objectives

In establishing Revenue Division objectives it was recognized that the Division must reduce its reliance on staff increases to meet projected workload growth, by introducing new operating techniques to processing functions. The objectives expressed are as follows:

(i)   to improve and expand capacities to process tax returns and remittances to a level that will accomodate increases in workload without appreciable increases in staff. Efficient processing in these areas is critical to protecting revenue flows in the government and has a positive influence in promoting the self-assessment and voluntary compliance system;

(ii)   to achieve a higher level audit coverage and revenue recovery and at the same time to minimize the potential of consequent disputes;

(iii)   to maintain prompt refund capacities proportionate to the projected volumes of returns filed and to accomodate potential tax policy changes in these capacities. Efficient processing of refunds is critical to promoting taxpayer attitudes that maintain the self-assessment and voluntary compliance system;

(iv)   to expand and improve taxpayer information
         services in the face of frequent changes to
         taxation policy. This objective is aimed at
         minimizing taxpayer uncertainty and promoting
         voluntary declaration of tax and payment
         requirements. Particular emphasis is to be
         placed on servicing small business and new
         taxpayers;

(v)   to simplify tax statutes, regulations, and
         administrative practices, in an effort to
         make taxation more understandable and
         certain to taxpayers and consequently to
         promote the accuracy of the self-assessment
         and compliance system;

(vi)   to achieve the relocation of Divisional
         operations to Oshawa without disruption, and at
         the same time to implement new processing
         techniques and staff development measures
         needed to improve productivity, taxpayer
         services, and protect tax yields; and

(vii)   to increase the security of confidential
         tax information within the Ministry.

2.1.2 Measures to Achieve Revenue Division Objectives

The objectives of the Revenue Division will be achieved by:

(i)   investing in further EDP and other forms of automation, in order to increase mass processing capacities, and to better utilize scarce staff resources in these areas;

(ii)   promoting staff development to allow the redeployment of staff in functions which are essentially discretionary, by upgrading their skills to accomodate increasingly complex tax cases; and

(iii)   promoting organizational development through:-
        the rationalizing of common functions; and
        the strengthening of forward planning, management skills, and taxpayer services.

Of the three measures, the FACTS project will concentrate on exploring the potential benefits of investment in further EDP, and other automated systems, with a view to increasing resource productivity.

COMPARATIVE RATE OF GROWTH
ACTIVE TAXPAYERS / BRANCH EMPLOYEES

GROWTH SINCE FISCAL YEAR 70/71

ACTIVE TAXPAYERS

TOTAL EMPLOYEES

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%

70/71   71/72   72/73   73/74   74/75   75/76   76/77   77/78   *78/79

FISCAL YEAR
2.2 FIGURE 1

*estimated
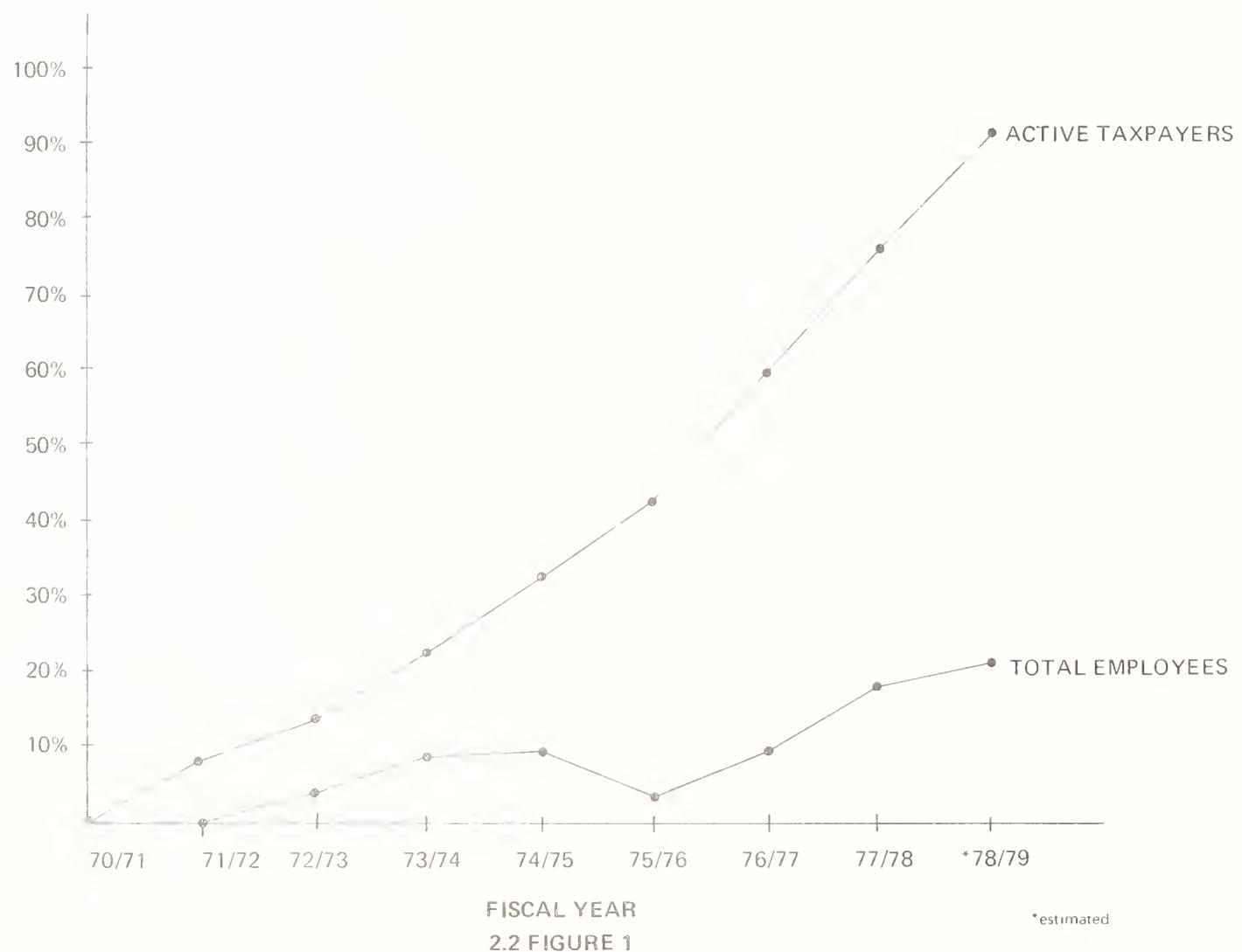
2.2. Workload Environment

Workloads in all sections of the Corporations Tax Branch are determined, either directly or indirectly, by the number of active corporations in the Province. As the number of active taxpayers increases, pressure to increase staff, to cope with the additional workload, also grows. But as illustrated in Figure 1, the Branch has been able to cope with the workload generated by a large increase in active taxpayers since the 1970-1971 fiscal year without proportionate increases in staff. While the active taxpayers have increased by 90%, the number of employees has increased by only 20%.

Non-discretionary Functions

In non-discretionary processing functions the workloads were accommodated without significant increases in staff, due to a fairly high degree of automation. These functions include the processing associated with: the setting up of new companies, the issuance and receipt of returns and remittances, and the billing of returns. Coupled with the automation factor, reorganization within the Branch allowed for more concentrated efforts to be placed on specific non-discretionary processing by formation of the Tax Return Centre for processing returns. This also allowed the Tax Roll Section to concentrate more on maintaining the integrity of the tax roll by removing the responsibility of processing returns.

Discretionary Functions

In functions such as collection and default follow-up, audit, and liens which require more discretion, Branch policy decisions played an important role in accommodating the increased workloads.

Manual collection activities at present are concentrated on those corporations owing more than $500. The audit area has implemented a new audit selection procedure for extended audits and the Liens Section has reduced the manual effort involved in giving lien clearances for certain types of requests through policy directives.

Support Functions

New technology and procedures are presently being introduced to, or considered for, those functions which support other Branch activities in an effort to resist staff increases in these areas.

CORPORATIONS TAX BRANCH -- ALLOCATION OF EMPLOYEES
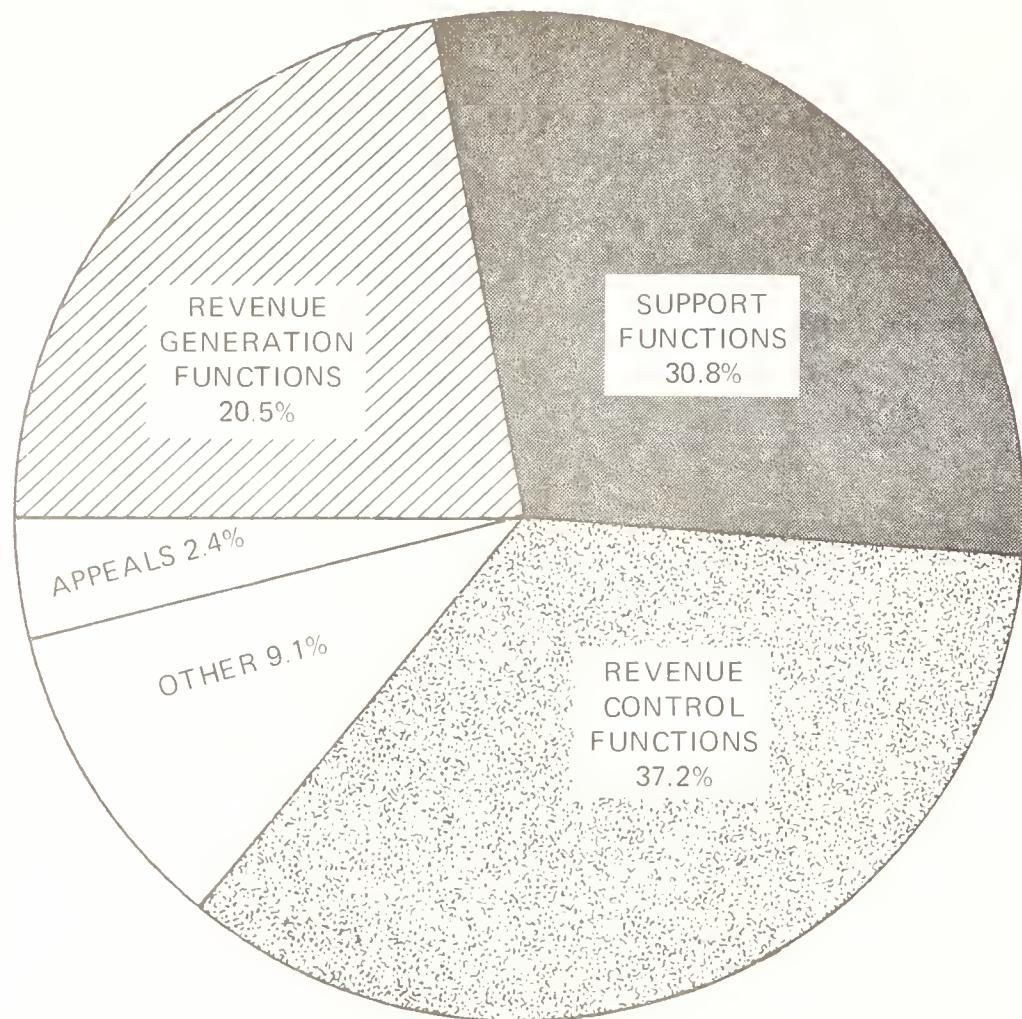
FUNCTION	SUB-FUNCTION	COMPLEMENT
REVENUE GENERATION	TAX RETURN CENTRE	14
	TAX ROLL	18
	ACCOUNTS	36
		68
SUPPORT	DATA ENTRY	14
	FILING ROOM	51
	TYPING	25
	I / Ø CONTROL	8
	EDP LIAISON	4
		102
REVENUE CONTROL	COLLECTION/DEFAULT	26
	AUDIT	84
	LIENS	13
		123
APPEALS	APPEALS	8
OTHER	BRANCH MANAGEMENT	13
	PLANNING OFFICERS	7
	LEGISLATION	5
	FDA	5
		30
	TOTAL COMPLEMENT	331

2.2 FIGURE 2

Allocation of Employees

The allocation of employees to functions within the Branch
is shown in Figure 2. Alignment of functions in the
illustration relates closely to the tax model recently
adopted by the Revenue Division for their strategic planning
activities. Revenue Generation functions, non-discretionary
in nature, account for only 20.5% of the total Branch staff.
This percentage reflects the high degree of automation in
these functions. Revenue Control functions, requiring more
discretion, account for 37.2% of the employees, while
Support Functions require 30.8% of the staff. Branch
management along with legislative, planning, and FDA
activities account for the remaining 9.1% of the total
complement.

The following section examines trends in each major
processing function within the Branch to establish a
perspective of the future workload environment.

CORPORATIONS ADMINISTERED BY THE BRANCH

CORPORATION
FILES

ACTIVE
TAX ROLL

CORPORATIONS
FILING RETURNS

NUMBER OF CORPORATIONS

400,000
380,000
360,000
340,000
320,000
300,000
280,000
260,000
240,000
220,000
200,000
180,000
160,000
140,000
120,000
100,000

1973 1974 1975 1976 1977 1978 1979 1980 1981 1982

CALENDAR YEAR
FIGURE 2.2.1.1
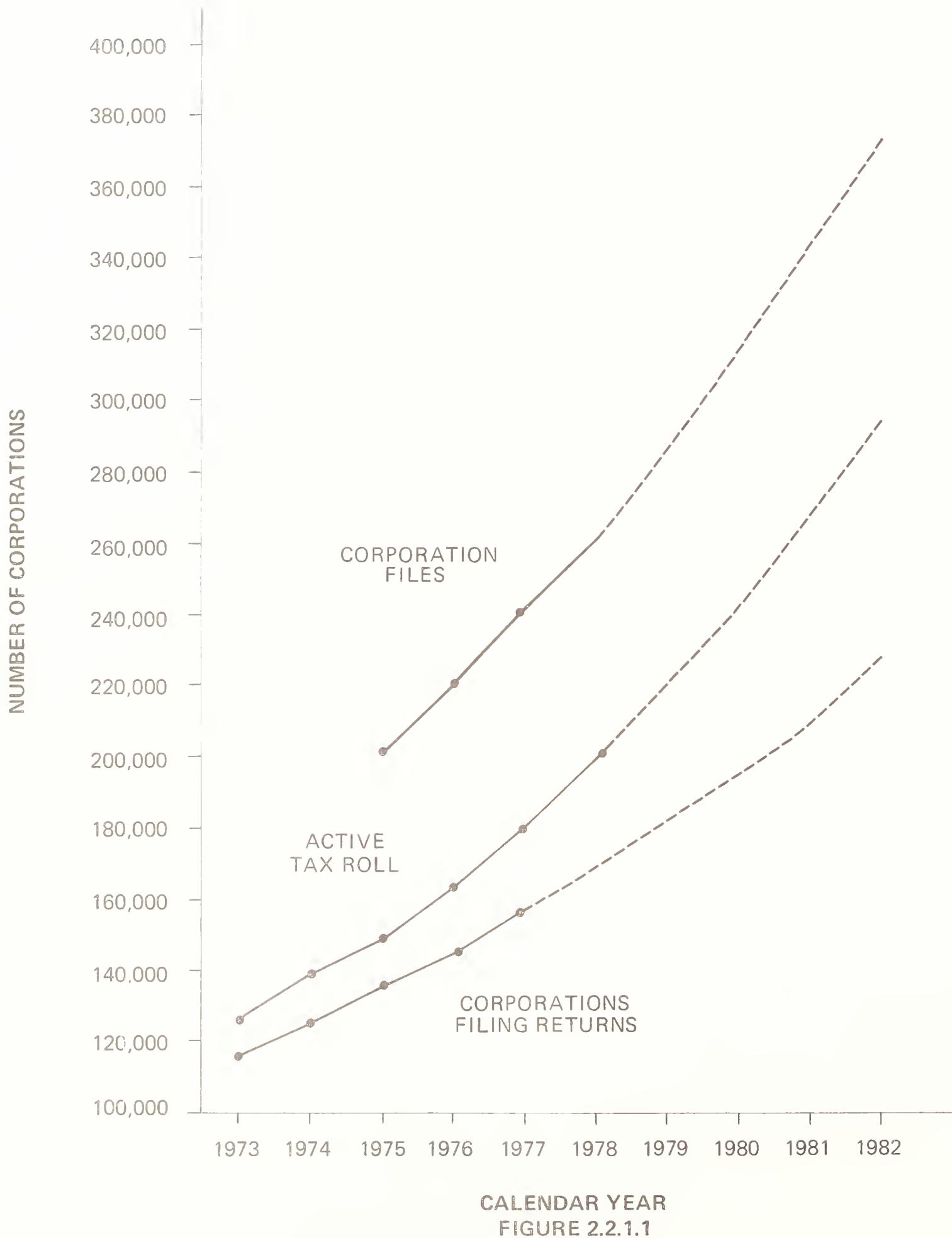
2.2.1 Tax Roll Profile

This section of the report views the tax roll in terms of number of corporations administered by the Branch and categorizes them according to their tax liability. Also depicted are workload measurements associated with the Tax Return Centre and the Tax Roll Section.

2.2.1.1 Corporations Administered By The Branch

The growth in the tax roll can be viewed from three different perspectives: the number of corporation files maintained by the Filing Room, the number of active corporations in the province, and the number of corporations filings returns. The number of active corporations and the number of corporations filing returns are measurements which more accurately reflect the workloads in the Tax Roll Section, the Tax Return Centre and the Accounts Section.

As shown in Figure 2.2.1.1. the growth rate of corporation files and active corporations is approximately 10% per annum, while the number of corporations filing original returns is increasing at about 8% per year. These growth rates may be volatile however, since they are subject to internal cancellation programmes, and external changes in the economy and legislation. At calendar year end 1978, there were approximately 258,300 corporation files maintained by the Branch, approximately 199,000 active corporations in the Province, and about 169,000 corporations were filing returns. If the 10% growth rate continues for corporation files and active corporations to the end of the 1982 calendar year, the Branch will be maintaining approximately 378,200 files and the active tax roll will have increased to over 290,000 corporations. By the same time, the number of corporations filing original returns will have reached about 220,000.

TAX LIABILITY PROFILE

PERCENT TO TOTAL
ASSESSED CORPORATIONS

|	1975			1976	
$2,000. or more	0 to $50.	$51. to $1,999.	$2,000. or more	0 to $50.	$51. to $1,999.
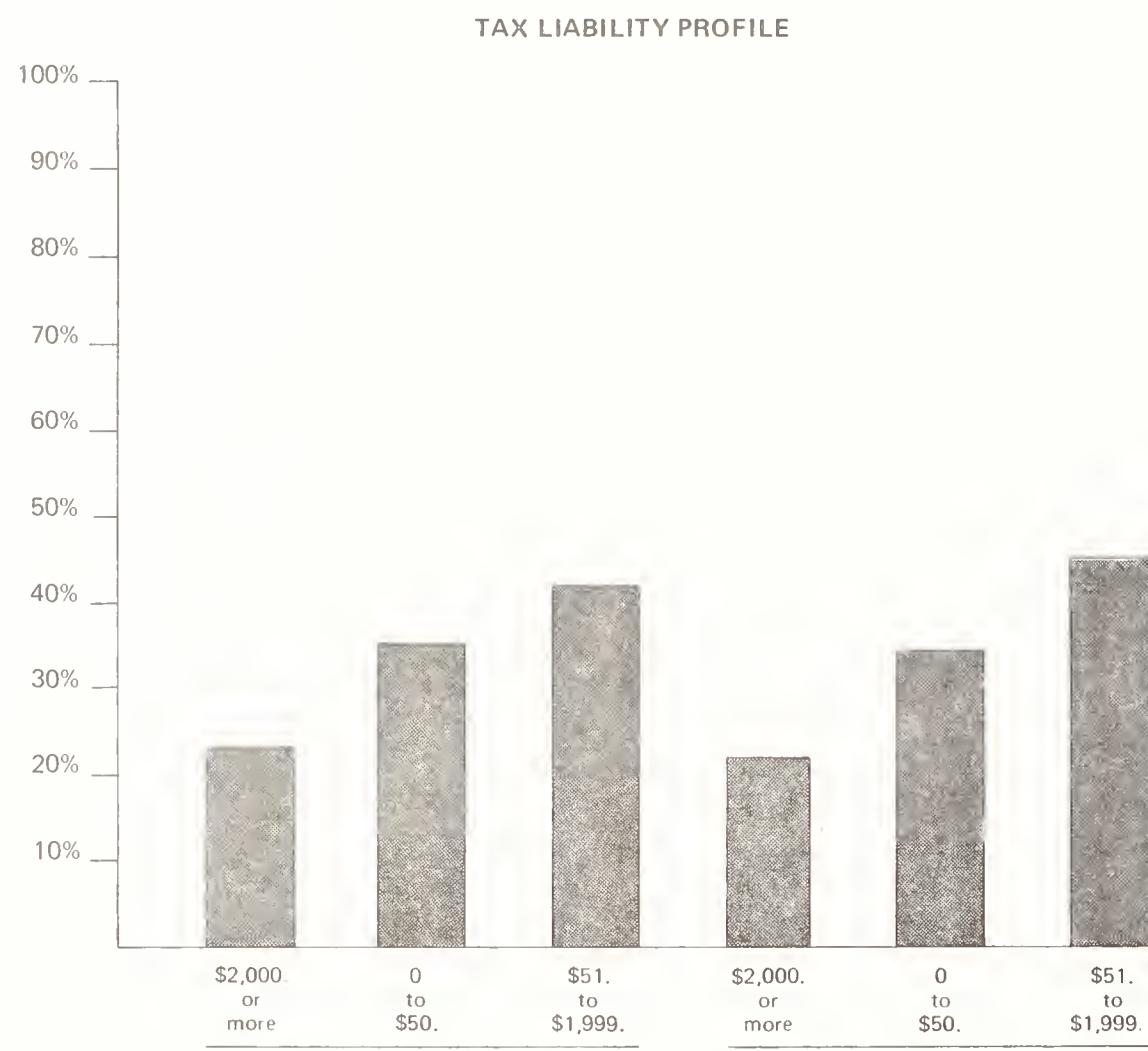
TOTAL TAX RANGES
FIGURE 2.2.1.2

2.2.1.2 Tax Liability Profile

A better appreciation for the workloads generated by
increases in the number of corporations can be gained by
categorizing companies according to their total tax
liabilities. Larger corporations, especially those paying
more than $2000 total tax annually, have a greater degree of
interaction with the Branch, since they must comply with
more complex legislative requirements such as the remittance
of instalment payments. Smaller corporations, including
those that pay some income tax, present a less complex
situation, while those corporations which pay the minimum
requirement of $50 capital tax require less manual attention
and can be dealt with in a more straightforward manner.

The amount of time expended in the return dressing and
screening operations is dependent to a large degree on the
tax liability of the corporation and the complexity of the
financial statements accompanying the returns. Workloads in
the Account Section, associated with the completion of
manual assessments, reassessments, and the checking of
refunds are more time consuming for larger corporations.
Time spent in auditing and investigating lien clearance
requests is also reflective of the size of the corporation
and the complexity of its tax liability situation.

Figure 2.2.1.2 illustrates the previously mentioned tax
liability categories as a percentage of the total assessed
corporations for the 1975 and 1976 taxation periods. In
1976, corporations paying more than $2000 total tax re-
presented 21.6% of the total assessed tax roll, while 33.5%
paid the minimum of $50, and 44.9% paid between $50 and
$2000 total tax.

VOLUME OF RETURNS PROCESSED
BY TAX RETURN CENTRE

RETURNS PROCESSED

300,000
280,000
260,000
240,000
220,000
200,000
180,000
160,000
140,000
120,000
100,000

1973   1974   1975   1976   1977   1978   1979   1980   1981   1982

CALENDAR YEAR

FIGURE 2.2.1.3.1

INCLUDES: ORIGINAL RETURNS
REJECT RESUBMISSION
FINANCIAL STATEMENT RESUBMISSIONS
AMENDED RETURNS
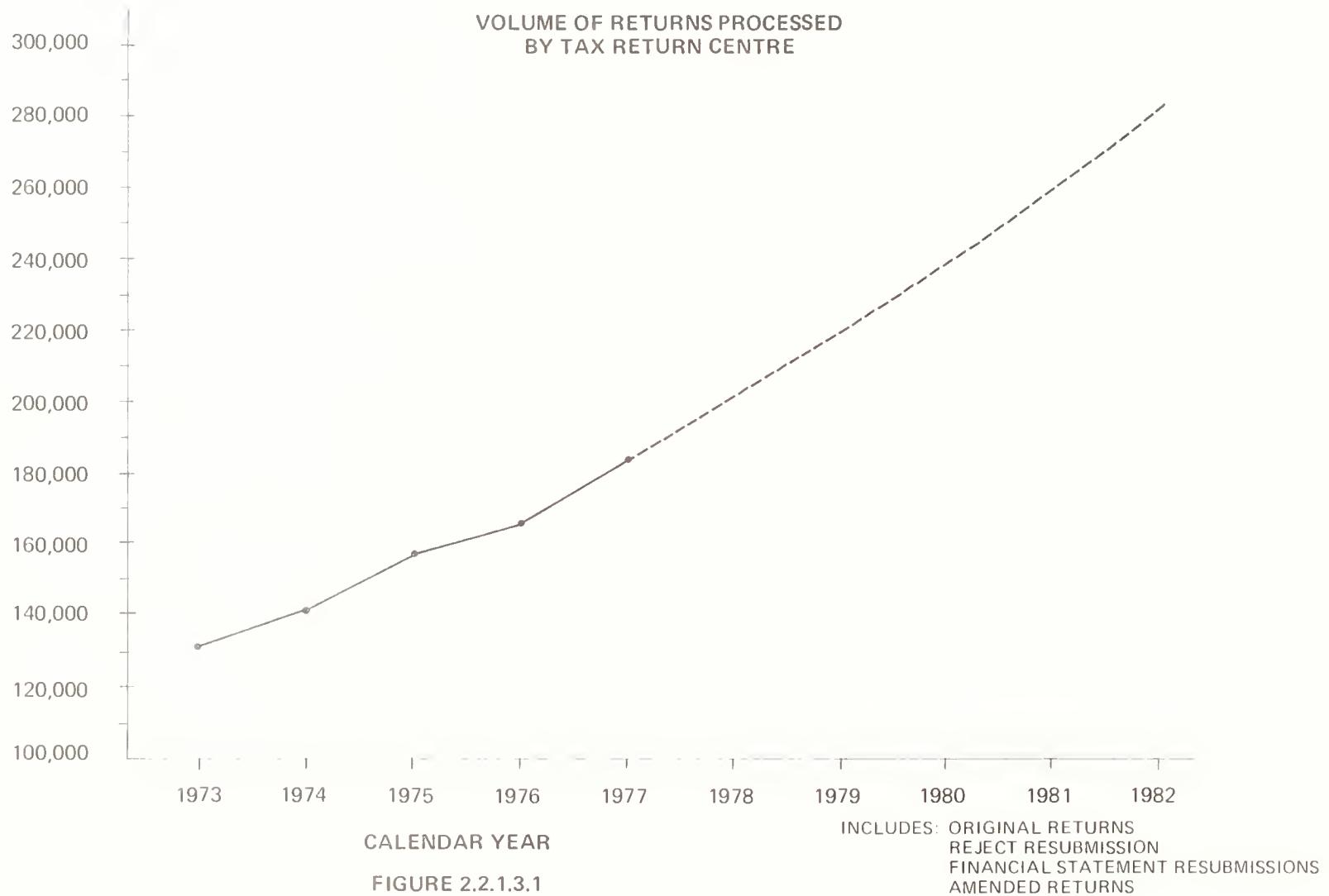
2.2.1.3 <u>Tax Return Centre Activities</u>

The total workload in the Tax Return Centre is determined by the number of returns filed and the workload distribution is subject to yearly and monthly filing patterns.

<u>Volume of Returns Processed</u>

Figure 2.2.1.3.1 depicts the volume of returns processed by the Branch since 1973 and projects the established trend to 1982. Included in the volumes are original and amended returns, as well as reprocessed returns due to missing financial statments and reject conditions. It is projected that by calendar year end 1982, the Tax Return Centre will be processing approximately 283,000 returns. This is a 42% increase over the 1978 level of 200,000 returns.

YEARLY WORK CYCLE FOR RETURNS FILED


ORIGINAL RETURNS FILED

| | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |

50,000 —
40,000 —
30,000 —
20,000 —
10,000 —
0 —

FILING DATE
(ADJUSTED FOR PROCESSING TIME LAG)
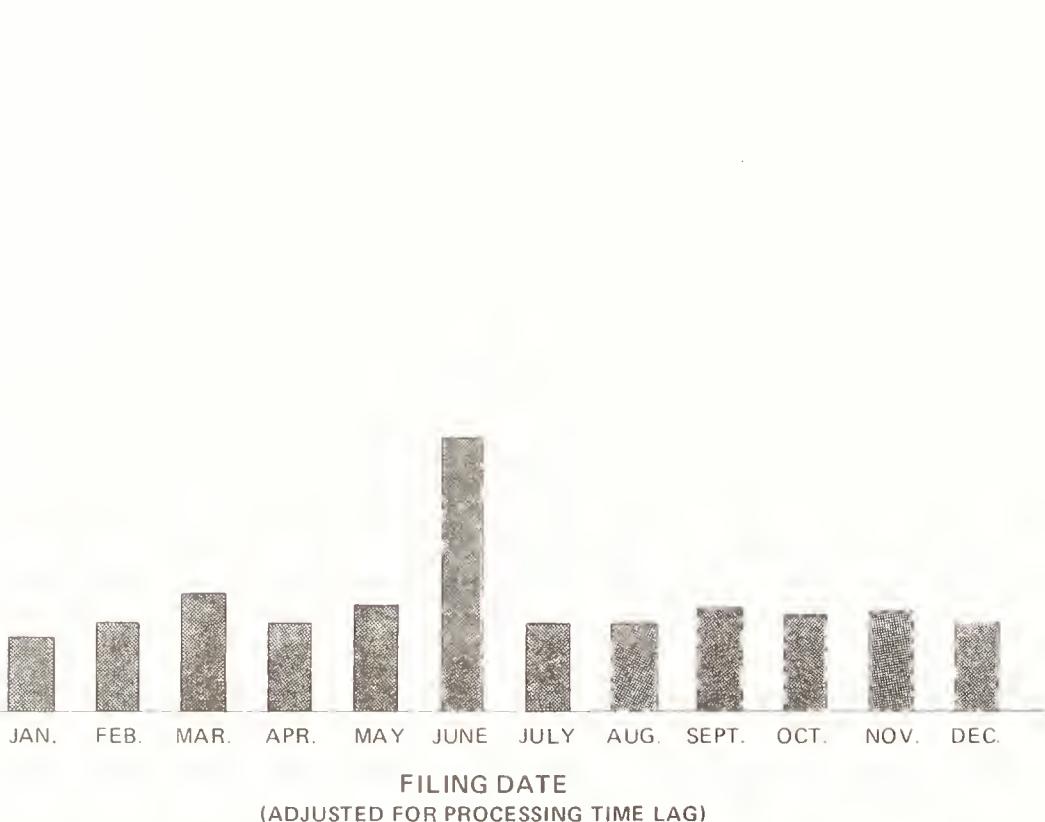
FIGURE 2.2.1.3.2

Filing Pattern Distribution

Figure 2.2.1.3.2 illustrates the annual distribution of returns filed by active corporations and the resulting work cycle distribution within the Tax Return Centre. The distribution is fairly level for all months (13,000 returns on average), except for June, where the volume of returns processed increases to over 30,000 and the Tax Return Centre staff is reinforced with staff from the audit area. Along with the annual work cycle, it is also important to realize that within each month, the majority of returns are received and manually processed during the last week and first week of each month.

Method of Processing

All returns are handled manually upon receipt and follow a
standard procedure of dressing and screening, with larger
corporations requiring more time to process than smaller or
$50 corporations. The average time to manually process a
return is between five and six minutes, with about 40% of
the time being spent on dressing, and 60% being spent on the
screening operation.

Reprocessed Returns

Presently returns which require reprocessing because of
missing financial statements number approximately 9,000
annually. Volumes of returns rejected by the computer
system vary weekly from a minimum of 7% to a maximum of 16%.

2.2.1.4 Tax Roll Section Workloads

The responsibility of the Tax Roll Section is to maintain an accurate and up to date tax roll of corporations. Involved with this are activities associated with: setting up new corporations, processing of address, fiscal year end, and statistical changes, as well as investigating the tax liability of corporations and administering the cancellation programme. The section is also responsible for the mailing of tax return packages and monitoring the issuance of remittance advices to the corporations.

The following table shows trends in some of the workload associated measurements within the section.

	Mar. 31 1976	Mar. 31 1977	Mar. 31 1978	Jan. 26 1979
New Corporations	16,185	23,133	22,120	24,484
Fiscal Changes	22,119	27,332	26,533	29,121
Address Changes	64,214	62,239	65,557	57,394
Statistical Changes	44,814	43,656	45,009	56,233
Active Tax Roll	149,567	167,483	184,667	200,949

ORIGINAL ASSESSMENT WORKLOADS
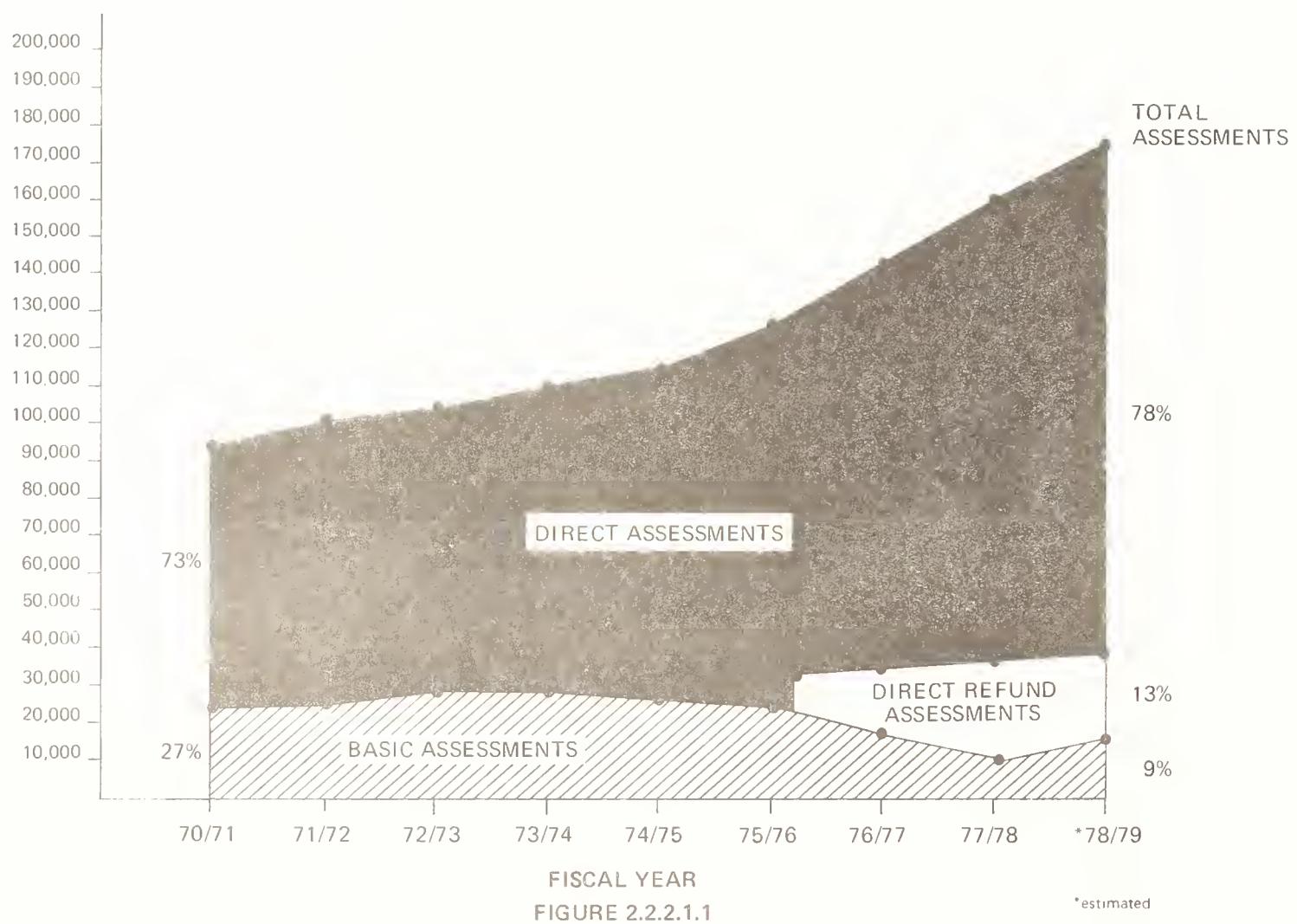
FIGURE 2.2.2.1.1

2.2.2 Accounts/Compliance Profile

This section depicts workload measurements associated with the Accounts Section, and the collection and default functions performed by the Collections Section.

### 2.2.2.1 Account Section Workload

The Accounts Section is responsible for the billing of original returns, reassessment billing resulting from audit, the preparation and approval of refunds, the handling of oral and written inquiries of an accounting nature, and ledger accounting functions. Many of the above functions are automated to varying degrees or are supported by information obtainable through the information retrieval system. Present manual workloads are concentrated in those activities which in the past have proven difficult to automate.

Billing of Original Returns

The billing of original returns is highly automated, with few assessments requiring manual attention prior to mailing. As shown in Figure 2.2.2.1.1 approximately 78% of the total number of assessments require no manual intervention, 13% are direct refund assessments which presently require verification checking before mailing, and 9% are basic assessments which require manual completion. In the fiscal year ending in March, 1978, there were 161,820 original assessments produced of which 123,485 were direct assessments (2,375 per week on average), 26,130 were direct refund assessments (500 per week on average), and 12,205 were basic assessments (235 per week on average).

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If present trends continue, by the end of the 1982 calendar
year, the Branch will be billing nearly 220,000 original
returns. Of these, 171,600 (3,300 per week) will be direct
assessments, 28,600 (550 per week) will be direct refund
assessments, and 19,800 (380 per week) will be basic
assessments. The manual workloads will be increasing but
the high degree of automation will absorb much of the
increase. It should be pointed out however, that the
numbers of basic assessments may be subject to greater
increases due to the recent legislative changes which
require twelve instalment payments annually from corpora-
tions whose total tax liability is greater than $2000. Also
the amount of checking involved for direct refund assess-
ments is dependent to a large degree on misallocation of
payments presently being experienced by the Branch.

REASSESSMENT WORKLOADS

VOLUME OF REASSESSMENTS

40,000

35,000

30,000

25,000

20,000

TOTAL REASSESSMENTS

DIRECT REASSESSMENTS

15,000

10,000

5,000

BASIC REASSESSMENTS

25%

75%

74/75   75/76   76/77   77/78   *78/79

*estimated

FISCAL YEAR
FIGURE 2.2.2.1.2
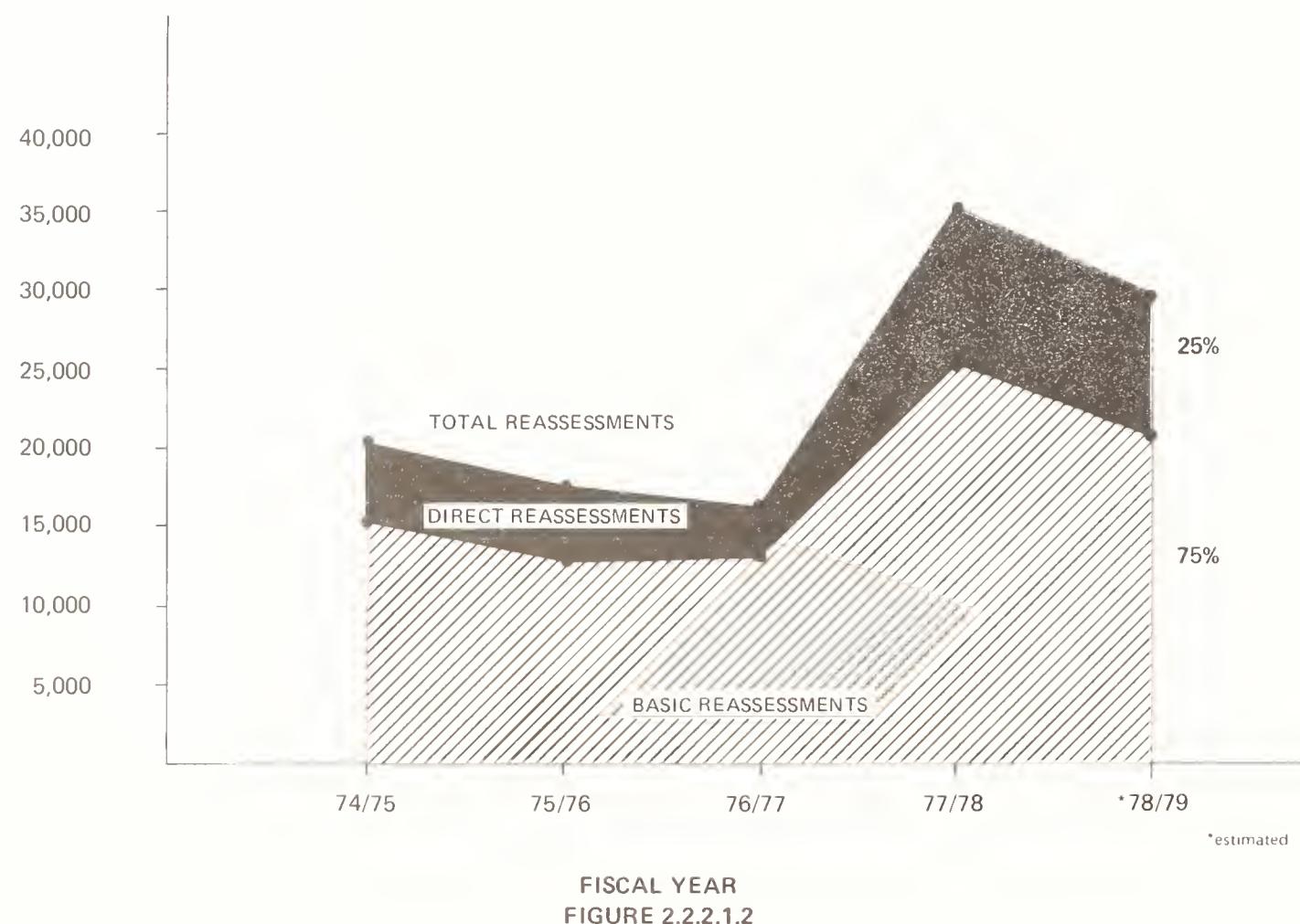
Reassessment Billing

Most of the manual effort expended by the billing area, is
directed to the completion of basic reassessments. The
number of reassessments, processed by the Accounts Section
is a direct result of the number of tax years changed by the
Audit Section, and therefore subject to variances in audit
policy and resource allocation. As shown in Figure 2.2.2.1.2
the total number of reassessments has varied from 20,795 in
the 1974-1975 fiscal year, to a low of 16,506 in the 1976-1977
fiscal, to a high of 36,031 in 1977-1978. The projected
number for the 1978-1979 fiscal year is approximately 30,000.
During this time direct reassessments, requiring minimum
manual effort by the Accounts Section, have averaged only
25% of the total. The other 75% require manual completion
and often present complex interest calculation procedures,
which involve not only the tax year being reassessed but
also subsequent tax years as well.

It is difficult to project future volumes of reassessments,
but if 20% audit coverage of the corporations filing returns
was achieved through the end of 1982, with an average
of two tax years being changed, the number of reassessments
produced would be 44,000. Of these 33,000 would require
manual completion (compared to 25,567 in 1977-1978) and only
11,000 would be direct (compared to 10,464 in 1977-1978).
This would increase the average number of basic reassess-
ments completed by the Accounts Section from 490 to approx-
imately 635 per week.

Correspondence (Inquiry) Workloads

The number of inquiries that are received by the Accounts
Section depends to a large degree on the volumes of original
assesments and reassessments produced by the Branch, and the
accuracy and understandability of those bills. The following
table shows volumes of inquiries for the fiscal years indicated.

March 31, 1977	March 31, 1978	Jan 31, 1979
29,576	35,253	25,211

Of the 35,253 inquires received in the fiscal year ending
March 1978, 16,564 were made by telephone and 18,689 were
received by mail. Until mid January this year 25,211 in-
quiries have been received and the division is approximately
50% by telephone (12,858) and 50% by mail (12,353).

2.2.2.2   Default Workloads

This area is responsible for promoting compliance by
corporations which are in default of filing returns. The
following table shows the default trend for each taxation
year starting with 1976, and also the implied workload for
the staff of eleven.

	1976	1977	1978	1979 *
Returns issued to corporations	148,126	162,172	179,945	197,940
Accounts receiving at least one default letter	37,151 / 25%	43,495 / 27%	53,983 / 30%	63,340 / 32%
Accounts requiring manual follow up action	13,583 / 9%	16,265 / 10%	19,794 / 11%	23,753 / 12%

*projected

The number of corporations in default is growing at a
greater rate than the corresponding increase in the
active tax roll and the number of returns issued. The
increased workload has necessitated a procedural change,
whereby corporations which have paid $50 tax in the last
two taxation periods filed and have gross revenue of
$25,000 in the last fiscal year are not followed up
manually. These corporations number approximately 4,000.

From the figures shown in the table a high percentage of
corporations do not file returns on time (25% to 30%). It
would appear that the letter programme encourages some
corporations to file, but it is evident that there is no
strong incentive for corporations to comply with the filing
requirements.

ACCOUNTS IN COLLECTIONS (60 DAYS AND MORE)
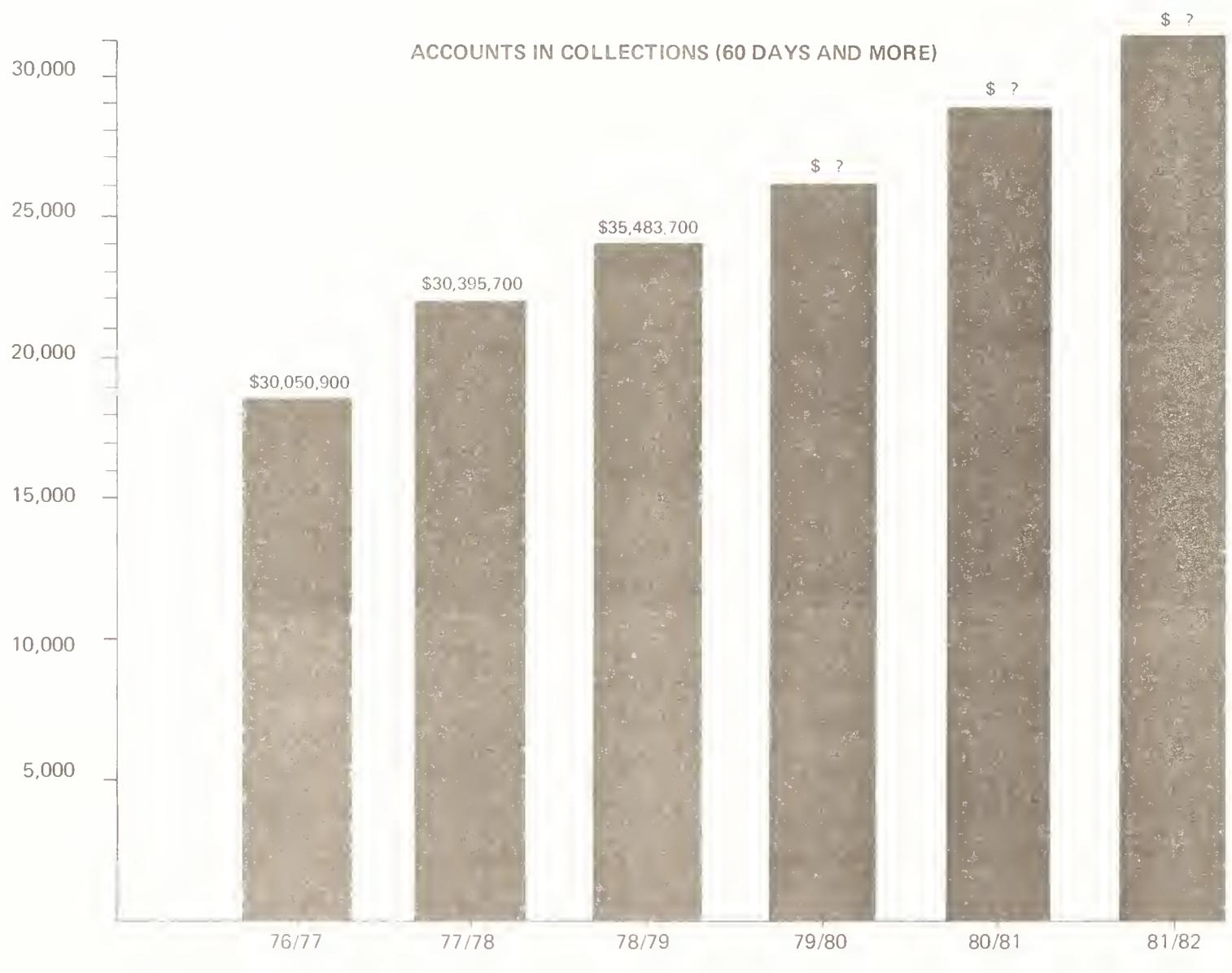
FIGURE 2.2.2.3.1

2.2.2.3 Collection Workloads

The Collection Section is responsible for obtaining payment of receivables which are outstanding after thirty days following an assessment or reassessment. The section is currently following a policy of not manually pursuing accounts with receivables of less than $500. For the purposes of this study analysis was undertaken of those accounts which had receivables outstanding for sixty days or longer.

Number of Collection Accounts

Figure 2.2.2.3.1 shows the average volume of accounts within each fiscal year with receivables at least sixty days old. In the 1976-1977 fiscal year there was an average of 18,650 accounts in this collection category at any one time. In 1977-1978 there were 21,850 accounts and thus far in the 1978-1979 the number has increased to 23,960. If these trends continue it is projected that in the 1981-1982 fiscal year there will be approximately 31,890 accounts on average, with receivables outstanding for more than sixty days. This is a 33% increase over the current level.

WORKLOAD BY COLLECTION CATEGORIES

PERCENTAGE OF CORPORATIONS IN COLLECTION

| $5,000 AND OVER | $500 – $5,000 | LESS THAN $500 |
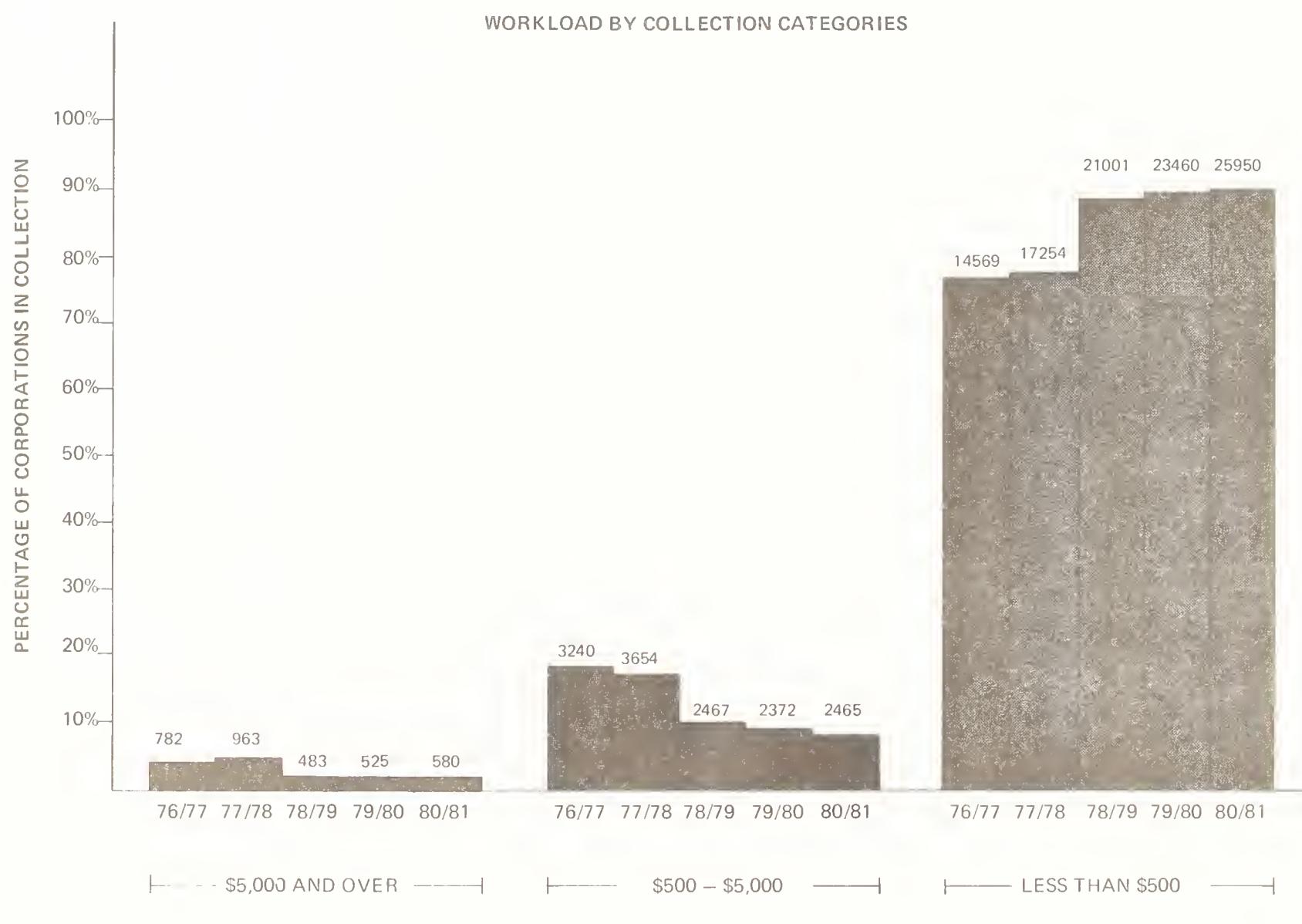
FIGURE 2.2.2.3.2

Workload By Collection Category

In Figure 2.2.2.3.2 accounts with receivables aged sixty
days or more are grouped into three categories: those owing
$5000 or more, those owing $500 to $5000, and those owing
less than $500. From the 1976-1977 fiscal year to present
the number of corporations owing greater than $5000 makes up
less than 5% of the total accounts. In 1976-1977 Corporations
owing $500 to $5000 represented 18% of the total number of
accounts while at present (in the 1978-1979 fiscal year)
they constitute only 10% of the total number. The decrease in
these two categories shows the effect of the policy decision
to pursue only those accounts which owe $500 or more.

The large majority of collection accounts fall into the $500
or less category and this number is increasing. In 1976-1977
there was an average of 14,569 accounts in this category
representing 78% of the total collection accounts aged sixty
days or more. In the present fiscal year 1978-1979 the
number of accounts has increased to average 21,001 and
represents 88% of all accounts. If this trend continues,
by the 1980-1981 fiscal year approximately 25,950 accounts
will be in this category at any one time, and they will
represent 90% of all collection accounts aged sixty days
or more.

It should be noted however that receivables owed by the
$500 or less category presently represent only 5% of total
receivables aged sixty days or more. Aproximately 42% of
accounts in this category owe $25 or less (usually additionally
accured interest) and will be cleared upon the next assessment
or reassessment. An additional 45% owe $25 to $100 and are
mostly minimum tax corporations. Non payment will eventually
make these corporations subject to the cancellation programme.
The remaining 13% owe $100 to $500 and will either enter the
cancellation cycle or the manual collection programme, as
their liability increases.

AGING PROFILE OF COLLECTION ACCOUNTS

LENGTH OF TIME IN COLLECTIONS
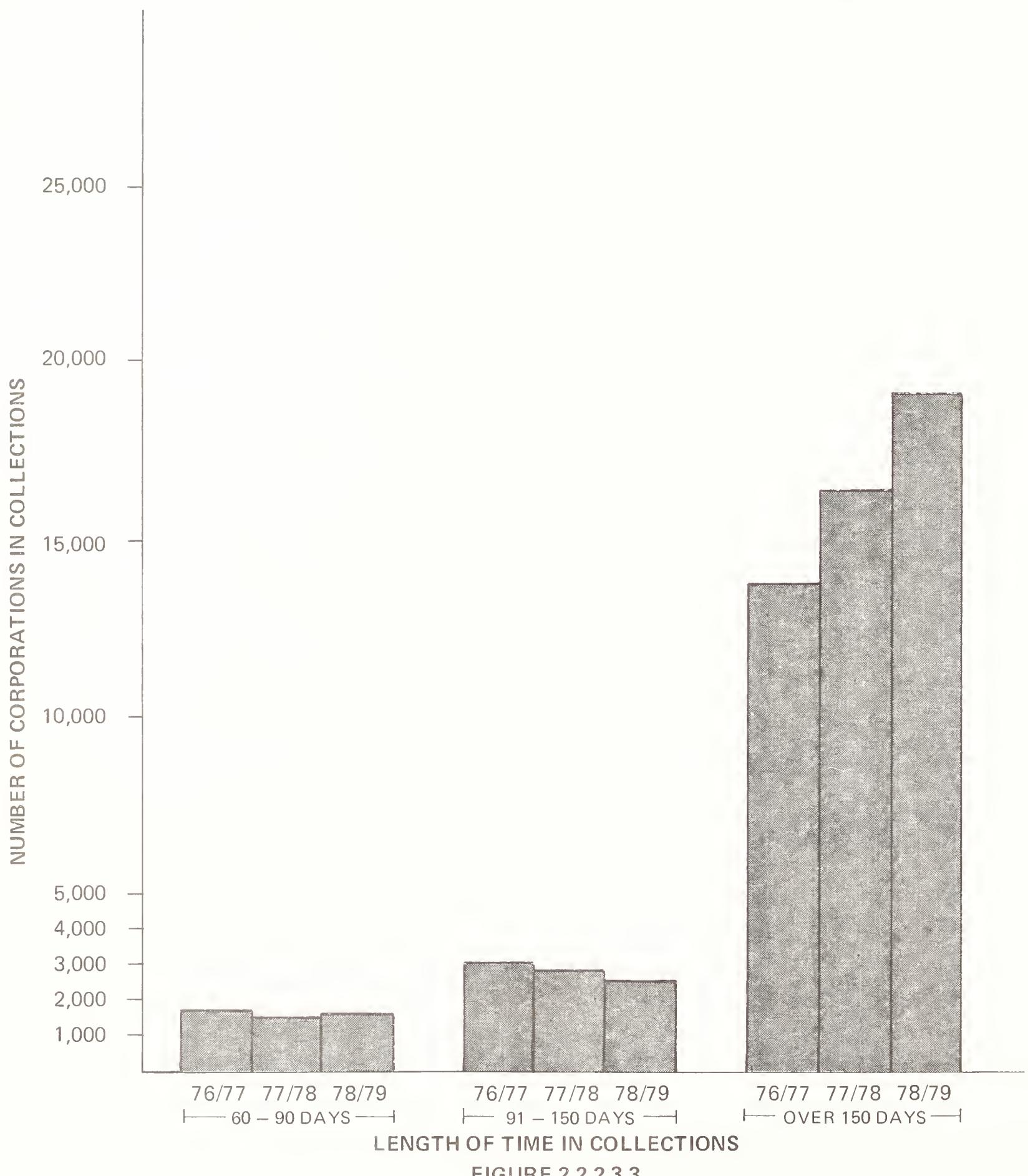
FIGURE 2.2.2.3.3

Aging of Collection Accounts

Another view of the collection accounts can be seen in
Figure 2.2.2.3.3. This illustration shows the average
number of accounts in each aging category at any one time.
In 1976-1977 the average number of accounts with receivables
aged 60 to 90 days was 1,683. At present the average number
is 1,692. In the 91 to 150 day category the average number
of accounts has decreased from 3,099 in 1976-1977 to 2,702
in 1978-1979. In the over 150 day category the average
number of accounts at any one time has increased signifi-
cantly from 13,875 in 1976-1977 to 19,092 in 1978-1979.
This is due mainly to not pursuing accounts owing less than
$500. At present 40% of total overdue revenue, and about
60% of revenue 60 days overdue or more, is in the 150 day
and older category.

TYPES OF AUDITS PERFORMED

FIELD 3%

EXTENDED
17%

NON-DISCRETIONARY
80%
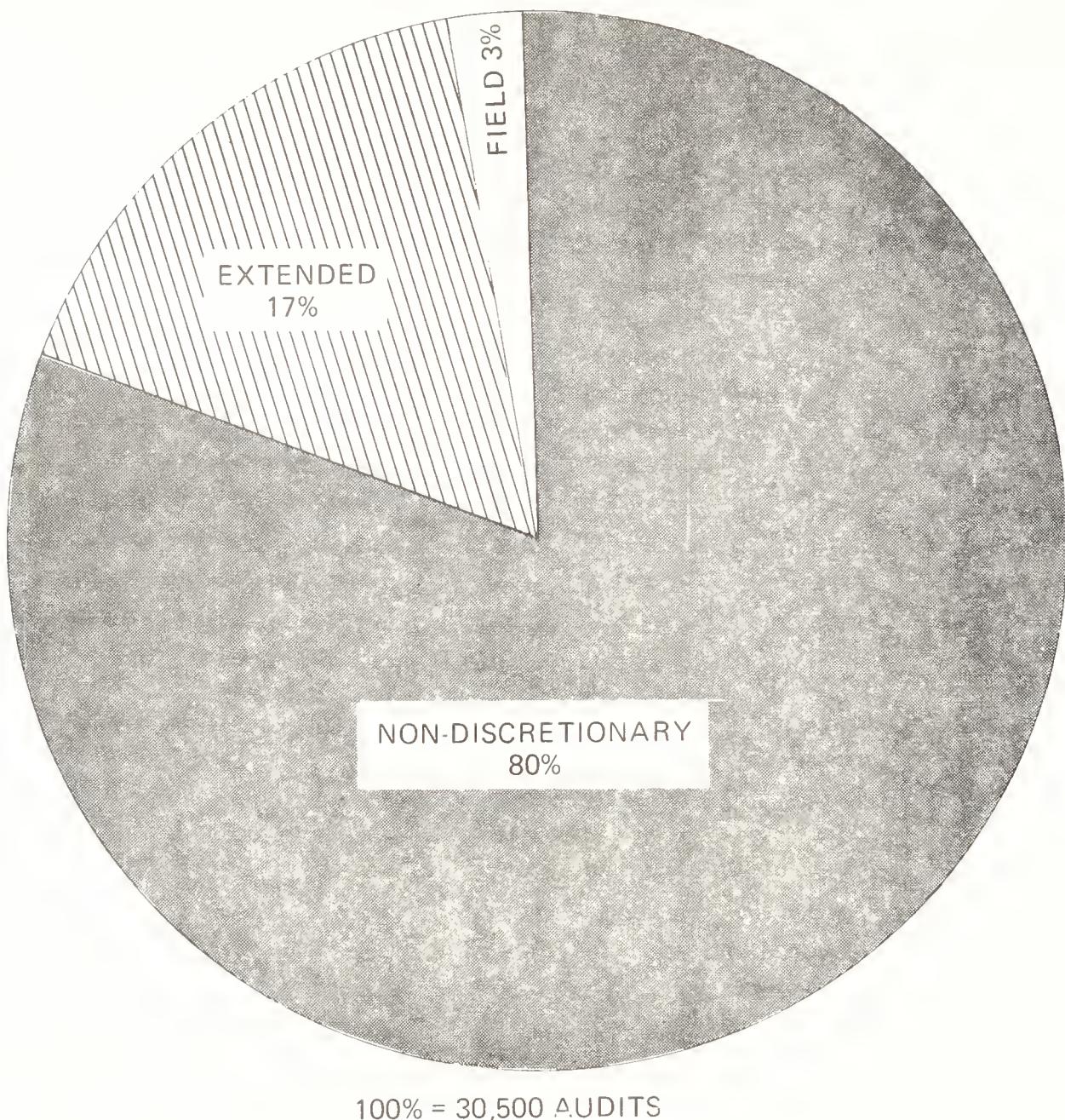
100% = 30,500 AUDITS

VOLUME OF AUDITS

FISCAL YEAR	NON DIS-CRETIONARY	EXTENDED	FIELD	TOTAL
77/78	25,923	7,400	730	34,053
78/79	24,500	5,400	600	30,500
*79/80	24,500	5,400	600	30,500

*estimated

SOURCES OF NON-DISCRETIONARY AUDITS

FISCAL YEAR	FEDERAL NOTICES	LOSS CARRY BACKS	AMENDED RETURNS	*OTHER	TOTAL
74/75	5,636	2,662	2,207	8,000	18,505
75/76	7,656	2,489	1,576	8,000	19,721
76/77	5,447	3,368	1,831	8,000	18,646
77/78	8,375	5,623	3,925	8,000	25,923
*78/79	7,500	4,500	4,500	8,000	24,500

*estimated

FIGURE 2.2.3.1.1

2.2.3   Audit/Liens/Appeals Profile

This section depicts workload measurements and character-
istics of the work performed in the Audit Sections, the
Liens Section and the Appeals Section.

2.2.3.1   Audit Workloads

Workloads in the Audit area are influenced by the volume of
Revenue Canada audits, legislation and economic conditions,
internal Branch policies and the availability of audit
staff.

Types of Audits Performed

As shown in Figure 2.2.3.1.1 the Audit area performs three
types of audits: non-discretionary audits, extended audits,
and field audits.   The volume of field audits is relatively
static at 600 to 700 per year and comprises approximately 3%
of all audits performed.   The volume of extended audits
performed is dependent on the availability of audit
complement after assigning audit staff to non-discretionary
audits and presently represents about 17% of the total
audits.   The largest portion of audits, (approximately 80%),
are non-discretionary audits which result from federal
notices of reassessment, loss carry back returns, amended
returns and adjustments, and internal Branch requests from
other operational sections.   Figure 2.2.3.1.1 also shows a
breakdown by source of non-discretionary audits.

AUDIT COVERAGE AS A PERCENTAGE OF ASSESSED TAX ROLL

PERCENTAGE OF ASSESSED TAX ROLL

TOTAL AUDITS

NON-DISCRETIONARY AUDITS

EXTENDED AND FIELD AUDITS

77/78   78/79   79/80   80/81   81/82   82/83

FISCAL YEARS
FIGURE 2.2.3.1.2
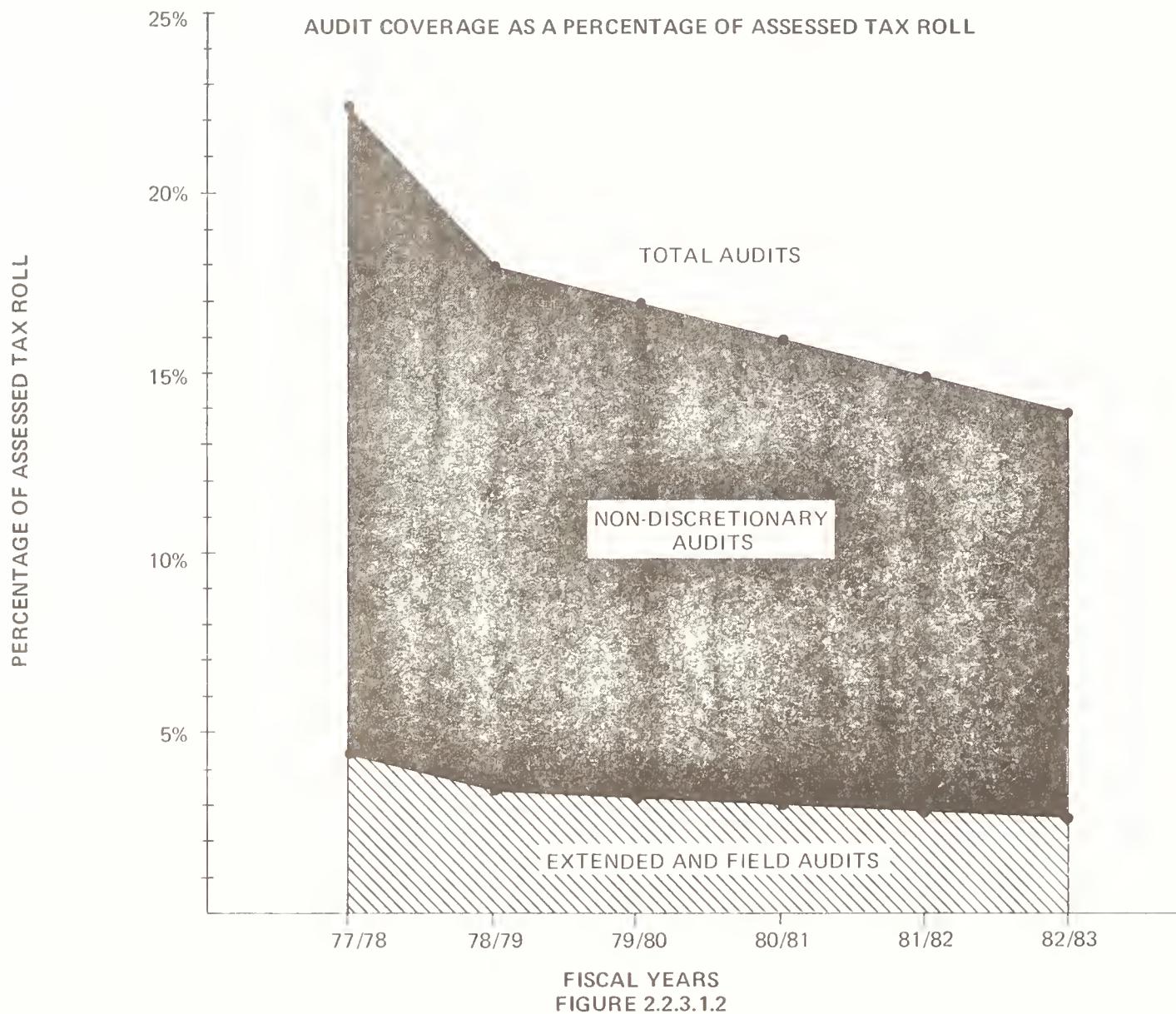
<u>Audit Coverage</u>

Forecasts indicate that the assessed tax roll will be in
excess of 200,000 by the end of 1982. Assuming that the
number of audits performed each year remains relatively
constant at approximately 30,000, then the percentage of
audit coverage of the overall assessed tax roll will
decrease. Figure 2.2.3.1.2 shows that overall audit
coverage will decrease from a high of 22.5% in 1977-1978 at
about 1% per year and that by the 1982-1983 fiscal year
coverage will have dropped below 15%.

Figure 2.2.3.1.2 also illustrates the type of audit coverage
achieved. In 1977-1978 the 22.5% coverage consisted of
about 18% coverage by non-discretionary audits and approx-
imately 4.5% coverage by extended and field audits. For the
1982-1983 fiscal year, the 14% coverage will be represented
by less than 3% coverage by extended and field audits while
non-discretionary audits will account for more than 11%.

ALLOCATION OF AUDITOR TIME

DESK AUDIT

SUPPORT ACTIVITIES 34%

NON-DISCRETIONARY AUDITING 34%

EXTENDED AUDITING 32%

## FIELD AUDIT

OTHER 16.4%
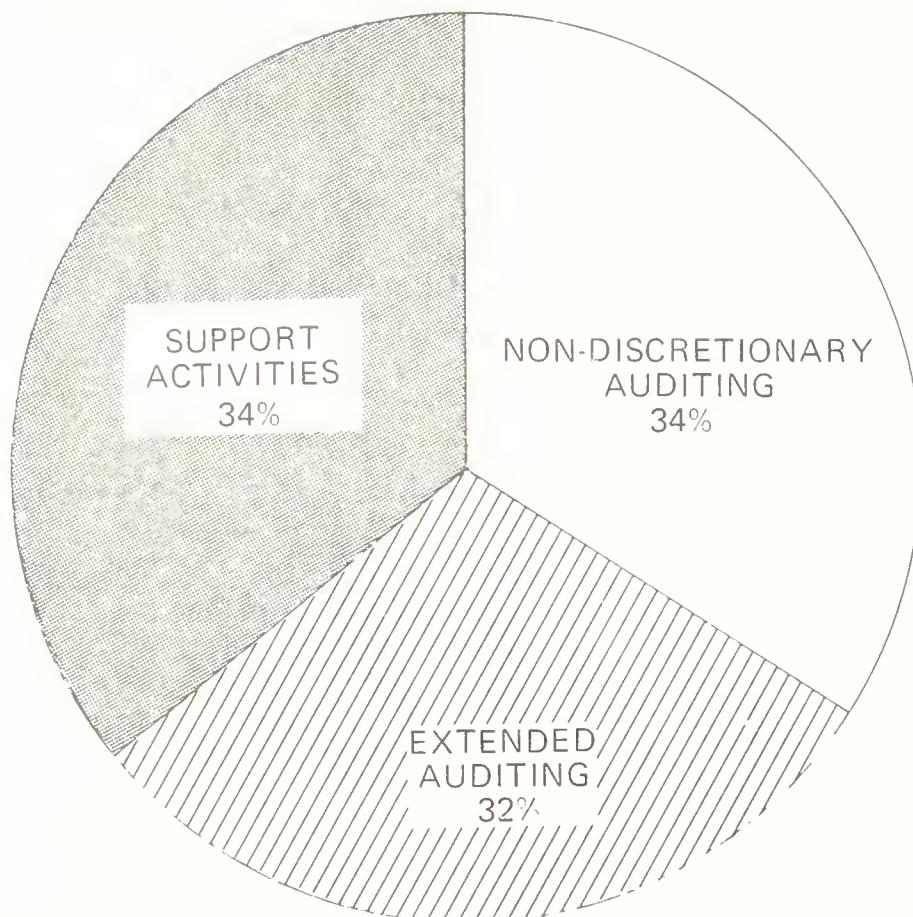
FIELD AUDITING 83.6%
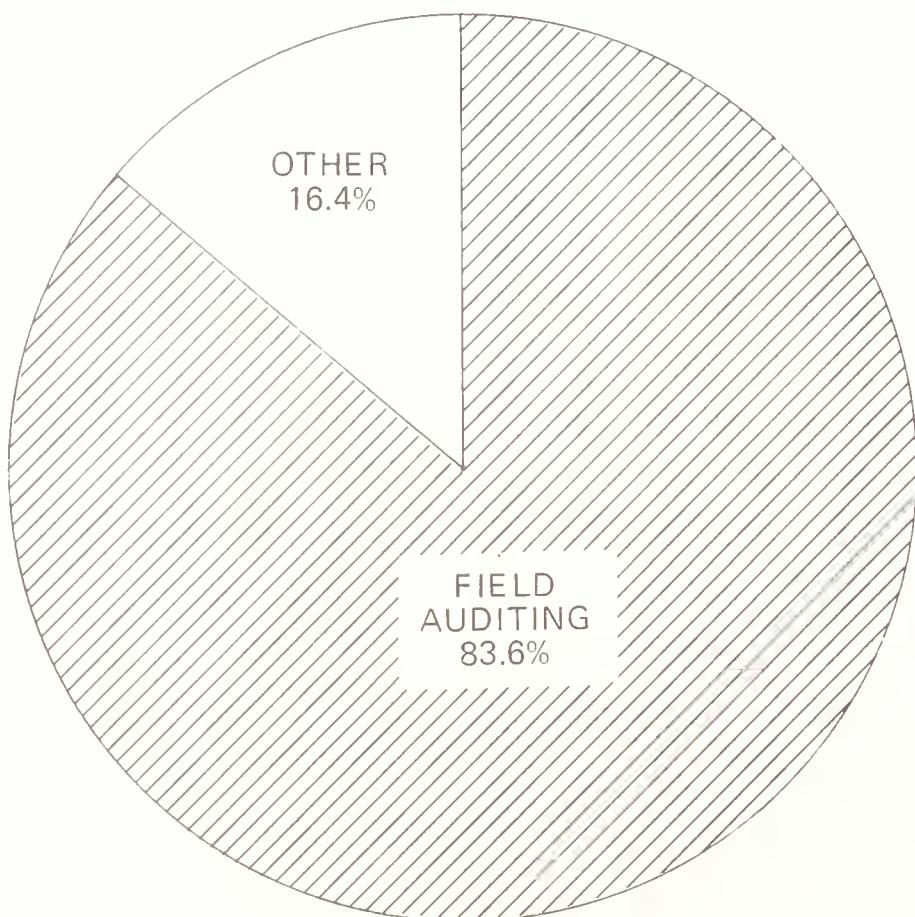
FIGURE 2.2.3.1.3

Allocation of Auditor Time

Although the primary function of the audit staff is auditing, some of the auditor's time is allocated to activities that do not directly involve auditing corporations. Figure 2.2.3.1.3 illustrates the allocation of auditor time to the different types of audits performed and to other activities.

In the Desk Audit area 34% of reported time in the section is spent directly on non-discretionary auditing, 32% is allocated to extended auditing and the remaining 34% is taken up with support activities. These support activities include assistance in the screening of returns in the Tax Return Centre, support for the Liens Section, internal audit planning, MBR reporting, answering telephone inquiries, and clerical work associated with the preparation of computer input.

The Field Audit area spends 83.6% of its time on direct auditing while 16.4% is taken up with clerical and support activities.

LIENS WORKLOADS
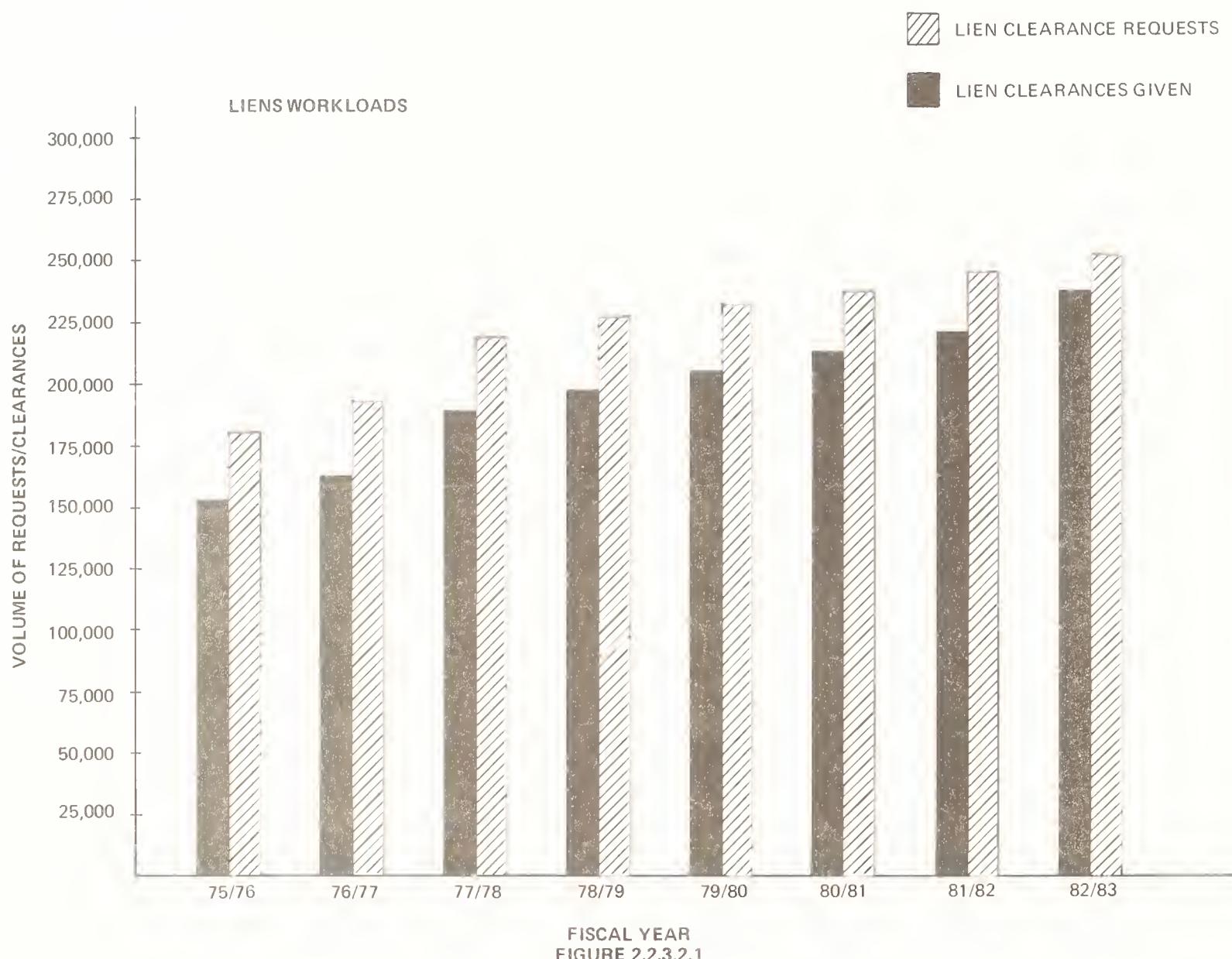
FIGURE 2.2.3.2.1

2.2.3.2 Liens Workloads

Workloads in the Lien Section have been growing steadily over the years and are in proportion to the size of the tax roll. Figure 2.2.3.2.1 indicates the trend in workload by illustrating the number of lien clearance requests received and the number of clearances given. The number of requests has grown from approximately 180,000 in 1975-1976 to an expected 225,000 in 1978-1979. If the present trend continues the number of requests will grow to over 250,000 by the end of the 1982-1983 fiscal year.

Nature of the Requests

Of the total requests for lien clearances, approximately 57% are received by mail, 42% by telephone and 1% are requested in person. Workloads are increased by duplicate effort expended on telephone and mail requests and the receipt of unnecessary and repetitive requests.

Accommodation of Workloads

The number of staff in the Liens Section has not increased in the last few years, and in order to offset the workload generated by an increasing number of clearance requests, internal policy directives have been implemented which limit the requirement to search a company file for corporations going off title prior to a certain date. Also the extent of search is now being governed by the size of the property sale. The Section still requires the hard copy Liens correspondence file for 20-30 requests per day and the hard copy corporation file for about 80 requests each week. These extensive searches represent the majority of manual effort expended by the staff.

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2.2.3.3 Appeals Section Workloads

The Appeals Section receives and processes approximately 500
objections annually. This volume has not increased signi-
ficantly in the last few years. The number of objections
received however, is in proportion to the quality and
quantity of assessments and reassessments originating
in the Branch and from Revenue Canada. It is reasonable
to assume that increased audit coverage would result in
more objections. One measure which could reduce the number
of objections handled by the Province was the introduction of
"designated assessments" in recent legislation, but there
has been no noticeable effect to this time.

2.3 Present Automated Processing Environment

2.3.1 Data Processing

The significant role of data processing in the present
activities of the Corporations Tax Branch is reflected
in the number of major computer sub-systems that comprise
the global data processing environment. They include the
CT Update and Production system with its attendant daily
edit programs, Information Retrieval, CT Monthly Statistics,
Financial Data Analysis, (FDA), Audit Statistics, Land Tax,
and some smaller sub-systems including Bulletin Labels and
Year End Report processing. Except for Land Tax, all the
sub-systems centre around the CT Update and the IMS data
base which it maintains. It is primarily therefore this
central system which will be addressed here.

Data Capture

At present all data entry is controlled by an Input/Output
section by means of batching and is funnelled through a Data
Entry section of approximately 12 operators. This central-
ized function services all the major CT sub-systems. There
is currently underway an upgrading of equipment from
Mohawk Data Sciences (MDS) tapewriters to Consolidated
Computer Incorporated (CCI) key-to-disk hardware, which will
reduce the need for 100% verification, will eliminate the
"daily edit" programs, and will provide a means of trans-
mitting keyed data to the central site via transmission line,
thereby eliminating the need to physically transfer a pooled
tape.

Although the programmable key-to-disk equipment con-
figuration will be beneficial to the internal operations of
the Data Entry section, the centralized, batch-oriented
aspect of the service will remain unchanged. Data will be
recorded at source on forms, forwarded to I/O control,
batched, data captured, and confirmed via edited confirmaton
lists or rejected on rejection reports.

Another development underway in the field of data capture is
the Remittance Processor System (soon to be in production in
the Cash Office) which is essentially based on the tech-
nology of Optical Character Recognition (OCR). For the
speedy processing of CT remittance slips, this equipment
requires that an OCR font is used in the preparation of the
appropriate output documents. The net effect of the
Remittance Processor System will be a significant reduction
in the number of instalment payments (now required each
month from eligible corporations) to be data recorded
manually from batched remittance advices. Payments without
OCR font remittance slips or without accompanying intended
year of payment information will be more subject to
misallocation, and will require processing through the Data
Entry section.

Data Base Design Characteristics

The batch origin of the CT data processing environment is
outlined in the background section of this report. At the
time of the conversion from the tape oriented update to the
disk based IMS update system, two design proposals were put
forward: one that replicated the tape Master File
definition to a large extent for ease of conversion, and an
enhanced version for development after the re-write of the
production system was completed. Currently the initial data
base design is in use and exhibits some of the processing
limitations of its derivation.

For instance, the main Account data base comprises eight (8) segment types of varying size, each of which can occur multiple times except for the root (or "general") segment. The program logic however expects maximum occurences for Assessment and Return segments (both 6), Money Matrix segments (11), and Overflow Name (3). This restriction of the program logic means that an amended return or a re-assessment re-uses the data base segment for the same (key) period, thereby deleting the original data. This is due to the direct influence of the fixed length record approach in the original tape oriented system, not to the limitation of the data base per se. This same influence is also in evidence in that all corporations are profiled in exactly the same way on the data base no matter how signi-ficant they are in terms of size, tax liability, instalment or non-instalment taxpayer, (although this might be reflect-ed to some degree in the number of transactions segments on the account). There is no "separation" made by status of the account, so that active, semi-active and inactive corpora-tions are all resident on the same physical data base and indistinguishable except when individually examined.

The data base design is comprised of four separate physical data bases for Accounts, FDA, KWIC (Key Word in Context) and Totals. The Account data base is by far the largest and all four reside on 3 spindles of 3330 Model II disks (some 2400 cylinders).

Batch Processing

The conversion to IMS data base technology has not yet
eliminated the strong centralized batch processing approach
of the main components of the Corporations Tax system.
However the central CT Update system has been re-designed to
process transactions separately from the control card
functions of scanning the entire data base for production
processing. All transactions are processed in transaction
type sequence prior to the scanning phase of the Update. To
a large degree this has achieved functional separation and
will enable Transaction processing to be carried on indepen-
dently.

However in addition to the Run Control card, data from the
Billing and S.I. letter control cards is required for a
successful Transaction Update and to some extent is a
reminder of the extensive coupling prevalent in the
pre-data base Update.

The primary key for accessing an account in the batch trans-
action update environment is the account number. Scanning
of the file for production is in physical (random) account
sequence on the data base and is not facilitated for this
purpose by any secondary indexing.

The characteristic features of the Monthly Statistics
sub-system have been influenced by the size, and therefore
complexity, of the main update program. Logic that could be
eliminated from the update was transferred onto a monthly
cycle where "read-only" processing became the norm. Extensive
CPU utilization, or non standard requests are accommodated
in this sub-system, thereby reducing the risk of delaying
the Update in any way. These features are still character-
istic of the Monthly Statistics run which primarily produces
statistical analyses of the Accounts data base.

Audit Statistics is also primarily a monthly cycle. It is
not however data base oriented in itself but receives
input tape datasets of audit statistics from each Trans-
action update, which are accumulated and added to an Audit
Statistics master file thereby producing current month and
year to date audit performance statistics. Traditionally in
the batch environment there have been problems in synchroniz-
ing audit performance with the correct month of the audit
outputs.

Land Tax does not form part of the mainstream of Corpora-
tions Tax processing, since it is not dealing exclusively
with a corporate clientele. Corporations Tax Branch has the
responsibility for the accounting function of the Land Tax
process which deals mainly with the yearly issuance of Land
Tax bills, the acceptance and application of remittances and
any follow-up collection activity. The process is entirely
batch and is not related to the other CT applications.

Information Systems

The control information feedback necessary to manage the
Corporations Tax systems is almost exclusively obtained as a
by-product of the operational processing functions on a
weekly or monthly basis. For example, Audit Statistics is
an information sub-system analysing data on audit perform-
ance and evaluating audit effectiveness. Similarly
Objection/Appeal statistics are made available out of the
Monthly Statistics. A source of information for fiscal and
tax policy changes is the FDA sub-system which has recently
been transformed to data base and will eventually comprise
30,000 accounts, representing three years of FDA history for
10,000 accounts each year. This expanded view of the
financial data of selected companies acts as an indicator of
the provincial corporate economy.

The Totals data base however, derived from the "totals" record of the tape Master File, is restricted to confirming balances of totals accumulated throughout the production update run. It is only made available during the update run and is unique in the CT data base environment in being the only data base with just one segment.

All Information Systems share one characteristic in common in that the medium for outputting the control results is paper oriented and not necessarily available when required but rather when scheduled.

Processing Cycles

CT batch processing is still characterized by paper-oriented output, due for the most part to the cyclical nature of the sub-systems. It is proposed in the near future to introduce twice weekly transaction updating to the main update system while the scanning of the data base will be scheduled every two weeks. Other sub-systems operate on a monthly cycle, as we have seen. All update processing will remain batch oriented and therefore paper-oriented, and will still depend heavily on data supplied in control cards for mailing dates, due dates, collection cycles, etc., which are all determined relative to the run date and run number.

Paper flow, while resulting in a longer work cycle, establishes a positive control and assists confirmation but is more inflexible to change due to its being embedded in manual procedures, and causes some peaking of workloads.

On-Line Processing

Current "on-line" processing in Corporations Tax is restricted to Information Retrieval through the CRT terminals. This major sub-system is available in the production environment during working hours and is presently supported by 27 terminals. It provides "read-only" access to account information through the account number or the Keyword Name (KWIC). It does not allow any insertion of data or manipulating of the account for update purposes. The KWIC data base is logically related to the Account data base and acts as the only example of secondary indexing in all the CT systems. It is presently restricted to the on-line processing environment and is not in use for batch processing.

The information retrieval capability currently offers some sixteen (16) different screen formats of account data (including KWIC). These are split into two major types of presentation; one designed primarily to assist the procedures of a specific function and the other type designed primarily to give complete detailed account data of a specific nature (e.g. all assessment data for an account). The KWIC feature allows access only through current name of the company. It does not retain amalgamation or old name data.

Costs of Processing

The data processing budget for Corporations Tax is nominally split into (a) Production (b) Maintenance and (c) Development. It does not include equipment rental for terminals nor any data capture costs, equipment or personnel.

The 1979-1980 production estimate for all CT sub-systems totals $515,000 for data centre costs, not including professional services of Management Systems Branch, and allows for all scheduled runs for Transaction updating, Control Card processing, Monthly Statistics, Audit Statistics, Land Tax and Information Retrieval. Over half the estimated budget is allocated to Information Retrieval since this sub-system absorbs costs for keyboard connection, terminal activity, program storage, data base storage, and data base back-up/recovery. Only the terminal activity cost is proportionate to the amount of workload processed by the system and, on the basis of 120,000 inquiries per month, each terminal inquiry costs $0.05. Connection charges, storage, recovery and equipment is additional.

The batch processing costs for the CT Update are now comparable to the previous tape oriented system, while all other batch processing costs remain fairly constant. The December/January costs for the CT update show an average cost of $3143 per weekly run of which non-update processing (transaction sort, print program and spooling) varied between 17.1% and 65.6% of the total for an average percentage cost of 37% of processing expenses.

2.3.2 Word Processing

Word processing was recently (1978) introduced to Corporations Tax Branch to accommodate the increased typing support necessary in an expanding workload environment.

The main advantage of the word processing concept at present is that repetitive correspondence, letters, and forms, can be stored on magnetic cards or "floppy" diskettes and re-produced at printer speeds without re-typing the main contents of the correspondence. Only the variable or personal section of the communication is typed. An example of this is the use made of the word processing equipment to produce typed re-assessment notices which require only name and address and dollar amount information to be added. This can be done either at the information processor for immediate printing or on magnetic cards from Mag II typewriters for later processing in batches. Multiple copies at original copy quality is also a feature of the equipment as is the automatic production of addressed envelopes with the correspondence.

Reports, manuals, forms, statistical work and correspondence also benefit in that, once typed, only changes need be re-worked for the final product. Mailing lists for bulletins are also stored on the Corporations Tax equipment for selected mailings unavailable from the computer files.

The key to the successful usage of the processing centre is the word processing manual, containing examples of the standard, stored, correspondence and forms, and the appropriate reference numbers by which clients request typing support. It is essential that it is maintained in an updated form throughout all client areas to ensure common understanding and communication in requesting work.

Word processing is presently undergoing major developments
by manufacturers who promise, in addition to feature
enhancement, communications capability with data processing
equipment.

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3.0 PROBLEMS PRESENTED BY THE ENVIRONMENT

The preceding sections have outlined the policy environment,
depicted the present and future workloads, and described the
present automated processing environment. The purpose of
this section is to identify those major areas of concern
which may be addressed by the application of increased
automation and improved methodologies. This section also
will establish the direction of subsequent investigative
efforts in the study.

In ascertaining the problems to be addressed, a series of
interviews was conducted with Corporations Tax Branch
management and selected Management Systems Branch personnel
to highlight areas of most concern. Potential solutions
arising from the interviews will be discussed in the final
stage of this project; at this time the primary purpose is
to establish a comprehensive appreciation for the strategic
problems confronting the Branch.

3.1 Problems Associated With Major Functions

3.1.1 Revenue Generation Functions

The Revenue Division policy, in the area of non-discre-
tionary processing functions, is to improve and expand
capacities to a level that will accommodate increases in
workload while additions in staff are kept to a minimum.
Current obstacles to this goal appear to be as outlined
below.

3.1.1.1 Tax Return Centre

Every return received by the Branch is manually dressed and
screened according to a standard procedure. Returns from
larger corporations take more time than those of smaller
corporations. There is a projected 48% increase in returns
to be processed by the end of 1982, and this additional
workload will require substantial increases in staff to
maintain current procedures and to process in detail the
more complex returns.

3.1.1.2 Accounts Section

Billing

Currently the Accounts Section manually completes 75% of all
reassessments and 9% of all original assessments. In
addition, extensive checking is required for refund
assessments due to a high incidence of cash misallocation.
These refund assessments account for 13% of all original
assessments produced.

The manual billing problem will increase as the tax roll
grows and as audit programmes produce more reassessments.

Correspondence

The quality of the mailed bills, with their non-standard
accounting presentation, limited explanations, and
inaccuracies due to cash misallocation, contribute
significantly to the volume of inquiries. Response to
inquiries is inhibited by the need to access hard copy file
information in many instances.

The number of inquiries will increase in proportion to the
volume of billing and the complexity of the legislation.

3.1.1.3 Tax Roll Section

Manual Tax Roll operations are restricted by long computer processing cycles and associated paper flows, as well as out-dated and limited information available on the computer terminals. These problems manifest themselves in the form of returned mail and time consuming access to hard copy files to produce additional workloads and are reflected in the level of services offered to the taxpayer.

As the tax roll grows, non-discretionary activities such as address changes, fiscal changes and statistical changes will increase proportionately and limit the efforts needed to investigate the tax liability of corporations and to administer the cancellation programme.

3.1.2 Revenue Control Functions

Policy related to Revenue Control Functions, which are more discretionary in nature, places importance on maintaining levels of comprehensive audit coverage and compliance enforcement which will promote the self-assessing and compliance system. Also stressed is the minimization of taxpayer disputes and maintenance of revenue flows. Problems associated with Revenue Control Functions appear to be as follows.

3.1.2.1 Collection/Default

The collection and default operations have been forced to become increasingly selective in the accounts that they manually follow up. This policy is justified in view of the volume of accounts requiring compliance action and the constraints on staff resources. However, the present automated system was designed for an environment where all delinquent accounts would eventually be followed up

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manually, if compliance was not achieved via the automated letter programmes. As a result many accounts now are omitted from any form of manual follow up procedure and a steadily increasing amount of computer output is no longer useful to the manual operation. It is also evident that there are no strong incentives for corporations to meet compliance requirements.

An additional problem may be realized from this situation in the form of taxpayer disputes if these unattended accounts enter the cancellation process.

3.1.2.2 Audit Sections

A large portion of the audit coverage (80%) is achieved through non-discretionary auditing and only 20% by the extended and field audit programmes. Non-discretionary audits, along with Branch and audit support activites, consume over 68% of the desk audit time and take away from extended audit actualization.

Also, it is indicated that overall audit coverage will decrease as the tax roll grows, unless additional audit resources are obtained. This decrease in coverage will be reflected in losses of potential revenue and the reduction of positive audit influence on the self-assessing and compliance system.

3.1.2.3 Liens Section

Although the effort by the Liens Section in processing clearances has been reduced by internal policy directives, the amount of paper flow into, and out of, the Section has grown as the tax roll and clearance requests increase. The workloads of the Section are compounded by unnecessary repetitive requests and the need to maintain and access hard copy files for many lien clearances.

Projected workload increases will dictate additional staff or further limiting policy directives.

3.1.3 Support Functions

Efficiency in support functions, such as data entry, typing, and filing is a critical factor in coping with additional workloads. Following are areas of concern in these functions.

3.1.3.1 Data Entry

Data capture is a centralized operation with the exception of some remittance advice data capture using OCR equipment in the Remittance Processing Centre. The operation is subject to peaks in workload brought about by the return filing pattern of corporations and is also affected by the scheduling of the computer runs. Keying of return and remittance data make up much of the workload but additional input is received from most sections of the Branch. Until the recent introduction of CCI key-to-disk equipment, verification of keyed data was a necessary major effort.

The introduction of new technology will help to alleviate workload pressures for a time. However with the projected increases in the tax roll the centralized nature of the data capture operation may cause a bottleneck in the future, and will continue to contribute to large paper flows throughout the Branch.

3.1.3.2 Typing

The typing area workload is reflective of other sections' work pressures and is symptomatic of the workload problems in the other functional processing areas.

The section requires a large staff compared to the overall complement of the Branch, but the recent introduction of word processing technology has potential for offsetting increasing workloads.

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3.1.3.3 Filing Room

Major concerns in the Filing Room are the amount of space required to store the hard copy files, the ability to provide efficient service to the rest of the Branch, and the large staff requirements (51 - almost 1/6 of the total Branch complement).

The situation will worsen as the tax roll increases, if present procedures and technology are maintained.

3.1.4 Management and Planning Functions

Management and planning activities can be complemented with automated techniques.

3.1.4.1 Management Information

In the future, the availability of information on which to base decisions for optional resource allocation, evaluate and change administrative practices, and determine Branch policies, will become an important factor. The rationaliz-ation of common functions within the Division will create increased communication complexity among related Corporations Tax functions. A comprehensive information system could tie all functions together. Such information is presently available only through manual effort or is inadequately presented by the computer system.

3.1.4.2 Staff Training Aids

Relocation of the Ministry to Oshawa will result in a requirement to train new staff. Training will be made easier if the clarity of the presentation of information by the computer system is enhanced. Also of benefit would be a flexible on-line series of computer assisted training modules specifically designed to suit the individual requirements of each Corporations Tax function.

3.2 Problems Associated With The Computer System

The present computer systems play an integral role in most
processing functions and as the requirements of the Branch
have changed certain restrictions have become evident.

3.2.1 Data Storage Limitations

In some functional processing areas, refinement in
procedures is restricted by the lack of stored information
accessible through the computer system. In the past it
could not be cost justified to capture and store such
information, but in the future it may become necessary in an
effort to adjust procedures to meet expanding workloads.

Retention of historical assessment and reassessment
information could assist Account Section billing procedures.
The retention of prior corporation names and the addition of
asset information may enhance other Branch procedures.

Along with the re-evaluation of data storage requirements,
employment of data management techniques, and determination
of comprehensive rules governing the retention of data items
stored on the computer files will be essential.

3.2.2 Batch Processing Influence

Most operational section of the Branch are influenced by the
scheduling of computer runs. The weekly processing cycle
for updates has become embedded in manual procedures to a
large extent. Results of this influence are manifested in
large paper flows permeating the Branch, a centralized data
entry operation for all input, and ubiquitous batching
control procedures. In most cases the extended work cycle
serves to impede productivity, and flexibility in the
processing environment is restricted.

As workloads increase, the efficiency of some functions may be enhanced through independent processing cycles that more readily match that function's work cycle.

3.2.3   Information System Capabilities

Summary information is produced from the present system as a by-product of operational processing in the update and by scanning all master accounts on a monthly basis.   The availability of summary information is coupled to the processing cycle of the update and statistical runs.

The recent introduction of the Information Centre concept by Management Systems Branch, to handle demand requests for information on a more timely basis, introduces flexibility in meeting user needs.   But the need to scan the complete master file to obtain desired information is costly.

As workloads increase and administration becomes more complex the need for a responsive, economical and flexible method of providing management information on demand will become apparent.   Future automation must address this need through the retention of summary data that can be presented in a variety of meaningful formats.

3.2.4   Interactive Support of Manual Procedures

The on-line information retrieval system supports manual procedures in an interactive manner, but data intended to update the computer files must be recorded on input forms, batched, keyed by data entry and submitted to the scheduled computer update run.   In addition some tasks such as interest calculations in the billing function, which lend themselves to interactive automated techniques, are presently done manually.   In other instances information is recorded on working documents in one section and forwarded to the typing area for production of mailing documents.

In the future the computer system must support manual operations in an interactive manner, in order to shorten processing cycles and contain units of work. Important to this interactive concept is the presentation of information in an easily understood format.

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4.0   TECHNOLOGY TRENDS

In order to cope with future workloads without
significant increases in staff, the Corporations Tax
Branch must adopt new operational and administrative
techniques which take advantage of advances in
technology. This section outlines technology trends
which may be applicable to the further automation of
Branch procedures and may aid the administrative
process. The topics outlined are those considered to
be most applicable to the Corporations Tax
environment. Consideration has been given to
technology which falls within the policy guidelines of
the Communication and Computer Services Division of the
Ministry of Government Services, since their support
will play an important role in the successful
application of further automation.

4.1   Mainframe Computer Processing

4.1.1 Communication and Computer Services
Division Policies

The Corporations Tax Branch utilizes the services of
the Communication and Computer Services Division (CCSD)
of the Ministry of Government Services for all its
electronic data processing requirements (except data
capture), on a cost-for-service basis. The policy of
CCSD has been to provide the basic computer processing
capability (hardware) to satisfy the ever-increasing
demands of both batch and, more significantly for
Corporations Tax, on-line processing systems in its
three data centres. The acquisition of more powerful
computers has enabled CCSD to meet this demand

more than adequately, and now allows the central
Computer Support Services Branch (CSSB) to broaden its
scope of technical service offered in the field of data
processing. In the future Corporations Tax Branch can
benefit from the specialized technical services in such
areas as tele-communications and data base research, as
the trend in data processing focuses more on the end
user and his individual requirements and emphasizes
more the interaction of computer and end user.

4.1.2 Mainframe Architecture

The policy of Communications and Computer Services
Division has been to stay within the mainstream of IBM
compatible architecture in acquiring computer hardware
and software. The huge investment in all Ministries'
computer systems ensures that this will not change
within the time span under review by FACTS. Therefore
a brief review here of possible central computer
technology trends will explore the potential impact on
the Corporations Tax system.

Firstly the Data Centre will want to continue offering
computer services in batch mode, transaction processing
mode (including data bases and terminals), and finally
time-sharing mode. A future development might be to
allow the computer to control this mixed-mode
processing more dynamically in response to time and
work-load, ensuring adequate service to all users.

Secondly there is a sharply increased need for
availability and reliability as more end-users
implement transaction processing (on-line) systems.
Interruptions to service must be infrequent and of
short duration.

Thirdly, ease of use and upward compatibility from
existing systems will be a requirement of the
marketplace.

These three overall marketplace requirements will be

met by increased automatic or built-in functions, such as more automated file management monitors, which in turn leads to higher system program overheads and correspondingly less throughout efficiency than currently experienced. Large Scale Integration (LSI) and the improved price-performance of semi-conductor circuits will compensate for this deficiency. The trend is, and will continue to be, towards more modular design of computers with dedicated processors (and associated integral software) to control each major subsystem of the computer architecture autonomously. Extensive use of micro-code in the dedicated processors will erode the dependency of the computer on the Operating System, thereby permitting multiple computers, input/output processors, and file management subsystems to access work simultaneously and in parallel.

Each functional processor, by having its own micro-code control system, will operate more independently, thereby significantly increasing overall throughput of work. Flexibility will be enhanced by allowing more functions to be added through new releases of micro-code with fewer major hardware disruptions.

The lower cost of electronic circuits will enable "designed-in" redundancy to provide better availability through increased reliability. Modular computer design, by incorporating multiple processors to perform a single major function, such as data base management, will also contribute to enhanced reliability through the multiplicity of available processing resources.

4.1.3 File Storage Subsystems

The file storage subsystem is critical for data base applications. New technologies such as charge-coupled devices, magnetic bubbles and holographic memory promise access to data at the speed of solid state electronics; but the next five years will also see

improvements to magnetic disk storage that will keep it cost competitive. Packing densities of disk-stored data will be increased by perhaps a factor of 10, enabling disks to store billions, rather than millions, of bytes of data. The unit cost of disk storage will therefore become very low. In addition, the speed of access to disk-stored data will improve through better management of the file storage subsystem via the autonomous processor concept outlined above; the subsystem processor will manage accessibility to data through various "staging" devices, from slower-speed storage units, such as mechanical disks, through electronic disks, into high speed cache memory. Such buffered disk systems, with their integral intelligent controllers, will perform many of the housekeeping operations currently required of the Access Method software (e.g. Corporations Tax System's Hierarchical Direct Access Method), and will therefore reduce substantially the overhead on the main processor.

4.1.4 Input/Output Subsystems

Non-impact printing technologies have already appeared in products like the IBM 3800 (at Leaside Data Centre), the Xerox 9700 and others, all equipped with intelligent controllers. The main feature evidenced so far has been high speed printing (20,000 lines per minute). However, because they are not limited to a single font, any character of any size, indeed any graphic image, can be reproduced, thereby eliminating the need for overprinting and many pre-printed forms. New input/output products will in the future offer more autonomy of operation through the utilization of intelligent processors, more flexibility and higher speed.

4.1.5 Data Base Developments

The advantages of a data base environment have been
endorsed by Corporations Tax Branch in the development
of its current IMS based computer system. The benefits
are numerous and need no repeating in this report. The
trends in modular computer architecture with its
functional specialization, and the increased capacity
and capability of file storage systems, augur well for
the burgeoning popularity and evolution of data base
systems. Dedicated data base processors will primarily
satisfy the needs of increased throughput and workload,
and enhance the integrity of data base contents. Two
trends in data processing technology may have a more
radical influence on data base concept and design in
the future, with the focus on simplicity of concept and
speed of searching data. The trends refer to
Relational Data Base Design and Associative Memory.

Relational Data Base Design promises to offer a means
of avoiding the entanglements that build up through the
multiplicity of logical linkages in hierarchical data
base structures. The technique it employs has been
termed "normalization", whose principles relate to the
user's view of data in a simple two dimensional
flat-file, represented graphicallly in the form of a
table. Normalization is the process of replacing
expressed data relationships with data relationships in
a two-dimensional tabular form, called a "relation". A
relational data base is one constructed from flat-file
arrangements of data items with the ability to process
the table by row or column. The advantage is that the
logical view of data can thus consist of sets of
two-dimensional columns operated upon by a relational
algebra for extracting columns and joining them in new
data subsets, and doing it simply.

Associative Memory is not connected exclusively with
data base technology but should prove of immense value
to data base systems where there often exists a
requirement to search many thousands of records for a

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particular condition (e.g. accounts whose fiscal period is December). Rather than serially processing records by means by evaluating the contents of a storage address, or specific region of computer memory, Associative Memory searches for data values (e.g. December fiscal period) by processing large blocks of memory in one search execution. It also has the ability to search multiple blocks of memory simultaneously, therefore increasing its throughput by the number of searches being conducted in parallel. This obvious advantage of speed, in conjunction with electronic disks and other high speed transfer storage units, will make obsolete all other forms of secondary indices as cumbersome and inadequate for future data base processing.

4.1.6 Data Transmission

There have been developments in the wide spectrum of telecommunication technology that have produced microwave and satellite transmission, optical fibres, message forwarding and packet switching software and facsimile transmission. However, over the next 5 years the bulk of channels used for teleprocessing will continue to be existing telephone lines. The cost per unit of data transmitted will fall as more terminals are added to the networks and share existing equipment. This cost reduction will not however rival the dramatic drop in prices experienced in other sectors of data processing. Data transmission will play an increasingly important role as distributed systems become more numerous and will become an increasingly important cost consideration in the design of on-line systems. It falls within the jurisdiction of the Commmunication and Computer Services Division of the Ministry of Government Services to address the problem of providing a common, province-wide data transmission network for the benefit of all Ministries with teleprocessing requirements. Such a service may benefit the Corporations Tax Branch after the move to Oshawa by offsetting the costs of data transmission through shared facilities with other Branches, Divisions and Ministries.

4.2 Small Business Computer Processing

The remarkable price/performance reduction in
large-scale computers has been equalled only in the
field of mini-computers. The trend will be for prices
to continue to fall as advances in technology,
specifically electronics, impact the costs of hardware
logic, computer memory and peripherals, in a
competitive market.

4.2.1 Typical SBC Appications

A Small Business Computer (SBC) is normally comprised
of a mini-computer as the central processor,
input/output devices, and storage peripherals, such as
magnetic tape and disk drives. The main distinguishing
feature of the SBC versus a mini is the packaged
software: whereas a mini computer can be said to be
designed for a single application in a dedicated mode,
the SBC is characterised by the versatility of its
general business applications such as payroll, accounts
receivable and payable, general ledger, order entry and
inventory control. The SBC appeals therefore to two
main potential users:- the small business as an
independent enterprise, and secondly, the branch office
of a large decentralized conglomerate where much of the
data processing is autonomous from the parent
organization. This latter approach may be implemented
either as an entirely discrete and decentralized SBC,
or as part of a distributed processing network which is
dependent on the central computer for overflow
processing capability or which reports through a
hierarchical system to the main office operation.

The advantage of the SBC for the small business lies
mainly in the cost/performance ratio: packaged data
processing is cost justifiable. For the large
decentralized company the advantage is that the data
processing structure can model the corporate
organization. There are however points to consider in
the deployment of a small business computer.

4.2.2 Comparison with Mainframes

In general a small business computer does not have the
flexibility offered by a large mainframe computer.
There are restrictions in its capacity and speed of
execution, in the number of terminals it can service,
in the type or size of the data base management system,
and the programming languages supported. The
mini-computer is susceptible to appplication change and
also evokes questions of operating staff, systems
programming support, and physical security. It appeals
most to low-volatile, pre-defined and scheduled data
processing environments.

4.2.3 Relevance to Corporations Tax Branch

The field of small business computers and enhanced
capability distributed processors is rapidly expanding
at this time, and it is likely that in the future many
new features and capabilities will be added. However,
for the medium-to-large centralized organization such
as Corporations Tax Branch, the trend over the next
five years will be to employ mini computers in
specialized internal functions that require repetitive,
local processing capacity, such as word processing,
data capture and computer based training. The longer
term may offer new opportunties for the deployment of
distributed processors as part of a Revenue Division
information processing network.

4.3 Terminals

The most visible impact of technology will result from
the increased use of computer terminals in the working
environment. The integration of terminal usage and
communication networks into work procedures will
greatly reduce office paper flows and will provide
flexibility in processing time cycles.

4.3.1 Cathode Ray Tube Terminals (CRT Screens)

While costs of CRT's remain relatively stable, more
features are being offered including enhanced keyboard
functions, increased screen character capacities, the
ability to split screen formats into portions which can
be scrolled independently, and increased data buffering
capacities. Many of these features are a result of
increased use of semiconductor chip technology. In the
future advantage will be gained by utilizing local
intelligence characteristics of CRT terminals. Some
local intelligence will be available in the terminals
themselves but a more powerful source of local
processing will be available by clustering terminals
around a versatile mini computer which will serve as a
node in a communications network. This will reduce the
dependency on mainframe processing and help optimize
data transmission requirements.

4.3.2 Printer Terminals

Printer costs have decreased to the point where it is
economically feasible to dedicate a printer to a
specific task. At the same time print quality has
improved and variety in character sets and font is
available. In the future remote printers, dedicated to
specific tasks, will serve to complement the on-line
CRT interactive environment.

In this capacity, printers will support reduction in internal paper flows by being oriented primarily toward the production of end-product outputs.

4.3.3 Terminal Oriented Work Environment

The movement of processing toward the end user will create a work environment where computer terminals become an integral part of office procedures. In many functions a terminal for each person will be required. Staff will use the terminal to access and update the main computer files. Along with this environment will come new skill requirements and work habit considerations. Clerical staff will require keyboard skills and procedures should offer variety in the execution of tasks. Terminals must be carefully introduced to the work environment so as to complement both the function being performed and the people performing the function.

4.4 Data Capture

Capturing data for storage on computer files has
traditionally been a labour intensive and
paper-dependent activity. The trends of most concern
to the Corporations Tax Branch are those which reduce
the labour intensity and paper flows. Increased
timeliness and integrity of stored data also are
important.

4.4.1 Data Capture At Source

A major trend is the dispersement of the data capture
operation to the source of data. This trend is in
keeping with the more general trend of bringing
processing power closer to the end user. Source data
entry operations can be coupled with access to master
file information or can be stand-alone. In either
situation the advantage comes from the ability to
perform comprehensive editing at entry time. When the
master file information is available, the editing can
be extended and keying effort can be significantly
reduced by taking advantage of the stored data. The
data capture operation becomes an extension of the
functional procedures performed by people who are
knowledgeable of the data, and provides the flexibility
necessary to correct errors in a real-time fashion.
Eliminated are the preparatory steps of transcription
to paper, batching, and the long processing cycles
which are inherent in a batch environment and a
centralized data entry operation.

4.4.2 Optical Character Recognition (OCR)

Another data capture technique is optical character recognition, which is likely to play an increasingly important role as manpower costs rise, and particularly in the government environment of constraint. The main advantage of optical character recognition techniques is the elimination of most keying effort. However the technique relies heavily on the receipt of OCR readable documents and becomes less reliable as more data is captured. More flexibility is being introduced, however, in the form of expansion in recognizable character sets and the ability to scan optically less precisely formatted documents.

4.4.3 Future of Data Capture

Data capture techniques for the immediate future are likely to remain paper-dependent. However the labour intensity can be reduced through the use of data entry at source and optical character recognition. In the longer term the dependency on paper input documents may be reduced by taking advantage of electronic funds transfer agreements and the availability of alternate sources of required data already in machine readable form.

4.5 Word Processing

The demand for word processing equipment has come
primarily from offices which produce a large volume of
typed material. Presently most installations have
concentrated on automating only the "typing" function.

4.5.1 Centralized Operation

When introducing word processing equipment many
installations centralized the typing function to
provide sufficient workload to maximize the benefits of
the equipment and thereby to justify the relatively
expensive cost. The typing equipment in these
installations is composed of a series of independent
stand-alone text editing units. Associated with this
environment many offices implement a centralized
dictation system as a method of input to the text
editors. Although there are many advantages in using
the word processing equipment (e.g. reduction of the
re-typing effort, the ability to use standard paragraph
wording to compose documents, and the production of
multiple, original copies), there are some
disadvantages with the centralized approach. Among
these disadvantages are the depersonalized relationship
between author and typist; the production-line concept
is not flexible enough for some users' needs; and the
administrative tasks which account for approximately
65% of the traditional secretarial/clerical typist
duties are often adversely affected when the typing
function is centralized.

4.5.2 Decentralization

During the next few years the trend will be towards a decentralized approach using "shared logic" word processing where many terminals access a central mini computer. These systems will provide increased capabilities including communication links with data processing equipment and will perform more non-typing functions. One of the main advantages of this decentralized approach is that it permits the typist to remain close to the user or "principal" and maintain a personalized service. The local word processing terminals will be used more for the type of activities for which word processing equipment was designed (i.e. text editing of existing material, typesetting, sorting, and mailing). Typing of original drafts or first time final documents, for which the equipment provides few advantages, could be typed on standard electric typewriters and fed into the word processing equipment through OCR readers or magnetic card readers.

4.5.3 Data Processing Link

Typing effort could be further reduced by making use of communication links with data processing equipment to access information stored in the computer environment. Such links will also facilitate the routing of documents, initiated in the on-line environment, to be produced via the word processing equipment when it is not justifiable to dedicate a printer full-time to the source of the on-line activity.

4.5.4 Longer Term Developments

In the longer term word processing capabilities will
become more decentralized and will play an integral
role in administrative activities. The scope of word
processing will become wider than the typing function
alone and will provide assistance in such
administrative tasks as: local file storage;
correspondence tracing and control; scheduling daily
meetings, appointments and calendars; logging telephone
communications; indexing files and reference material;
and the receipt and delivery of "electronic" mail.
With the advent of increased communication links to
data processing equipment and other office equipment,
word processing will become one component in the larger
concept of information processing.

4.6 Filing Systems

The amount of information gathering and filing has
increased greatly in the last few years and it is
likely to continue as organizations view information as
a valuable resource.

Traditionally, the source of information has been
paper-oriented and the purpose of filing systems has
been to organize this paper for accessibility. However
with the large accumulation of paper the cost of
storage space has become critical, accessibility has
degraded, and staff requirements in filing operations
have increased disproportionately to other
organizational functions. Distribution of paper files
to other areas within the organization has usually
involved physical removal of the file from the
centralized operation - a practice which results in
service and integrity problems. In an effort to
alleviate some of these problems alternate methods of
storing information are becoming more popular. There
appears to be two main alternatives to paper filing
operations; namely, image recording on video media such
as microfilm or microfiche, and computer file storage.

4.6.1 Image Recording

Image recording is primarily aimed at reducing filing
space requirements but there are other advantages
associated with this type of filing system.
Information is recorded in the same format as it
appeared on the paper document. A master copy of the
file can be maintained and duplicate copies can be used
to satisfy requests for information from other areas in
the organization. The equipment and duplicating
aspects of the operation are relatively inexpensive.

4.6.2 Computer Storage

Computer storage is primarily aimed at storing data
items and providing accessibility together with data
manipulation ability. Therefore, it is limited as a
filing system in so far as it pertains to the storage
of complete document images and associated signatures.
But computer storage can address the filing problem in
part by recording data items which are frequently
accessed. Multiple access to this information becomes
immediate through on-line terminals and the need to
file original documents may consequently be reduced.
Information thus stored in the computer system can be
reproduced on paper or on any image medium, as desired.

4.6.3 Future Filing Systems

In future, paper filing systems must give way to image
recording techniques and computer storage capabilities,
in order to make the space requirement manageable and
to provide an acceptable level of accessibility to all
areas of the organization. This filing conversion will
bring with it data capture considerations, and will
limit the ability to reference more than one document
at the same time on a single video reader. These
disadvantages should be offset by the advances in less
labour intensive data capture techniques and the
sophistication of video readers. Computers storage
will be used for frequently accessed data items while
image recording media will store the bulk of
information less frequently accessed, historical in
nature, or that requires image, rather than item,
storage. The image recording and computer data storage
concepts will complement each other with greater use
being made of computer output on microfiche (COM) in an
effort to make the transfer of computer stored

information to the image recording medium less labour
intensive.   On the other hand the data processing
system could complement the image recording system by
maintaining indices to randomly stored information on
videotape which could be used to direct manual
retrieval of the information or actually retrieve the
videotaped document from an automatic storage device.

4.7 End User Features

The success of many of the new trends in business
systems technology will depend on their acceptability
to the end user community and several of those trends
will have a direct bearing on the efficiency and work
capacity of the end user.

4.7.1 The Information Centre Concept

A need has been recognized by the end user for quick
access to his data files for "ad hoc" information: the
trend is to provide an alternate route to the scheduled
production run, since it often cannot respond quickly
enough to requests of a specialised nature. This route
has materialized as the Information Centre. By means
of programming languages specifically designed for
information retrieval and numerical analysis (such as
APL and Easytrieve) this service can provide fast
report turnaround for short duration projects. A
further trend is for the Information Centre to instruct
end user operational staff how to handle their own
requests by interfacing directly with the computer
system and developing their own inquiry programs.
The overall benefit to the end user will be faster
access to information and increased flexibility of
analysis and reporting. This speedier response to the
needs of the end user will be a feature not only of the
Information Centre. New non-procedural computer
languages (which replace detailed program execution
code sequences with "rules" for data usage, storage,
update and access) will aid programmers to meet end
user demands for shorter program development times.
Such a software development aid is Applications
Development Facility (ADF).

4.7.2 Computer Based Training

An end user feature that will more directly impact the
working environment and will be eminently suitable for
high staff turnover situations (such as might occur in
the relocation to Oshawa) is the trend towards using
the computer for job instruction and training. This
has the advantage of offering a consistent and
comprehensive training programme that can be constantly
and easily refined to meet changes in legislation and
procedures.

An extension to the computer based training concept is
the trend towards an on-line capability of interpreting
data. As management of data and the importance of data
as a resource become more recognized, so too the trend
will be for the end user to have information about the
disposition and interpretation of stored data available
on a terminal. Documentation will therefore be within
reach when required in electronic format, more easily
maintained and accessible via a Data Dictionary or Data
Directory.

4.7.3 Workstation Features

It appears that at the hub of the new working
environment will be the end user job oriented
workstation. This will consist of a processing
capability, storage, a means of information entry, and
display.

Application software will be much more an integral part
of these workstations than currently experienced; such
workstations are already appearing such as data entry
terminals, remittance processors and bank teller
terminals.

The equivalent of to-day's word processing terminals will also be offered as part of an integrated network, which will be able to create and receive messages via computer message systems and store and retrieve information in electronic files. In general there will be a trend toward more end user interaction with the computer, more graphic display output, much reduced paperwork and form-filling, and all in a real-time environment, less subject to scheduled batch runs. Under such circumstances, the spatial atmosphere and layout of the working environment is of all importance.

The relocation to Oshawa will provide an opportunity to promote fully the workstation concept where desks, equipment, terminals and other support devices will complement each other in an environment planned for efficiency.

4.8 Management Aids

As the operational requirements of organizations become more and more automated, effort will be concentrated in providing automated support to managers for their planning, monitoring, and control functions. The main concentration will be aimed at providing information to managers in a fast and effective manner.

4.8.1 Management Workstations

To facilitate this effort, management workstation terminals will play an important role in providing the ability to search for and present information. The workstations will provide features for highlighting selected information in graphic form. Also included will be powerful query capabilities, alerting services for specified events, computer message services, decision support logic, storage facilities for filing information, and word processing capabilities.

4.8.2 Accumulation of Management Information

Key to this environment will be the accumulation of information that can be presented in a variety of formats. Other trends, such as the increased emphasis on terminals in the operational environment and capturing data at source, will facilitate the gathering of information that is needed for management planning, monitoring, and control.

4.8.3 Presentation of Management Information

For effective use by management, information must be
presented in an up to date and meaningful format. To
this end, graphic displays will be used more
extensively in the future. Graphic presentation has
the advantage of interpreting information into a format
which readily displays and summarizes trends in a
manner which can be easily referenced and understood
without time consuming manipulation of information.
Terminals with this capacity will be widely used by
management in the future and will offer a variety of
features, such as manipulative formats and
multi-coloured graphs, for an effective means of
presentation.

4.9 Security

There has been a continuing trend for organizations to record expanding volumes of data and to employ electronic computers for controlling this valuable resource. User demand for instantly available information, coupled with the data retrieval capability of current data base systems, has resulted in easier accessibility to stored data than ever before. The swing away from batch processing toward teleprocessing has removed the ability to contain access to data within one geographic location. Data is dispersed throughout communication networks, from the main processor through storage buffers, memory banks and teleprocessing circuits, to visual image Cathode Ray Tube (CRT) screens and printer terminals. Under this technologically changing environment the purpose of a security programme remains unchanged (though in an expanding role) in attempting to: -

i) insure for authorized users the continuing availility of approved records and services; and

ii) deny to unauthorized users access to information, programs, files and supporting reference documentation.

To this end, security considerations are divided into:-

i) security and integrity of electronically stored data (including computer program libraries); and

ii) physical security of working locations, terminals, hard copy files and documentation.

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4.9.1 Data Security and Integrity

The increased reliability of data processing equipment
has reduced the incidence of accidental loss of data
files but is offset by the paralyzing effect such a
loss would have on the operations of an organization.
Paramount importance therefore is placed on the backup
and recovery capability of a computer system. Multiple
storage media will be increasingly used to implement
standard, automated backup and recovery procedures
which will require little or no operator involvement.
File management systems, such as Tape Management System
(TMS), will play an increasingly important role in
controlling the multiplicity of stored data sets,
including backup copies. The trend towards
teleprocessing systems will further reduce the
potential loss of data which could occur during the
physical transportation of files between different
locations.

Protection against accidental or unauthorized
disclosure, alteration, deletion or addition, of data
will receive increasing attention in systems employing
on-line access capabilities. Data Base Management
Systems such as IMS, enhanced by control program
products such as Resource Access Control Facility
(RACF), will restrict data access to identified
terminals. Passwords and improved personal
identification systems such as magnetically coded
badges will further restrict access to authorized
personnel only.

In addition, software products such as Data
Dictionaries will enable the data resource of
organizations to be graded according to the degree of
security to be assigned, in a calculated breach of
security risk assessment programme. Each data element
will be classified and prioritized as to how vital it

is to the organization. It will be determined not only which terminal and which operator, but also which computer program, can access data for purposes of retrieval or update.

The logical view of data, as established by the Data Base Administrator, will also control access to the physical data at the segment and field level, in sharp contrast to the conventional batch system which had access to each entire record of the entire file. As more data is collected in on-line system environments such data management tools will become indispensable.

A further level of data protection will be offered by encoding stored data in compacted form. For on-line systems, data encryption devices at each end of the teleprocessing circuit will scramble/unscramble data transmitted via the public network. Such devices will nullify the effects of any accidental misrouting of transmitted data.

4.9.2 Physical Security

Physical access to the Data Centres of the Ministry of Government Services is controlled by security guards using video cameras and other surveillance equipment. Cipher code locks and magnetic badges control access to restricted areas. The new Ministry of Revenue building in Oshawa can be economically equipped with similar physical workplace security features. The level of security required will be reviewed as plans for the relocation to Oshawa develop, and will appear in policies that will take into account the trend away from paper-oriented files towards micro recorded and computer stored information that is more readily accessible.

4.10   Summary of Trends

The purpose of this section is to provide a synthesis
of those trends in technology and automation that will
have some bearing on the Corporations Tax Branch.

4.10.1 Costs of Processing

The data centres of the Ministry of Government Services
will offer increasing reliability and throughput
resulting in greater end user service. Data Base
systems will especially benefit from lower per unit
storage costs in the shorter term, and from new
concepts in data base design and searching
techniques in the longer term. Generally costs of
data processing on a per unit basis will reduce
gradually but greater utilization will not allow
overall data processing expenditures to drop.
For Corporations Tax Branch, constant changes in
legislation and the need for flexibility will dictate
allegiance to mainframe processing on a cost for
service basis.

4.10.2 Increased End User Processing

The integration of teleprocessing into daily office
tasks will emphasize the utilization of terminals, both
screen and hard copy, in reducing internal paperwork
flows. Terminals will offer more functions with local
intelligence, at no increase in cost, and will result
in speedier, more flexible task processing. Printer
terminals will enable workflow to orientate towards
end-product documents, bypassing many of the
intermediate, paperwork-laden steps.

4.10.3 Decentralized Processing

The traditional labour intensity of the data capture function will be diminished by the decentralization of the data capture process to the source of data. Data entry at source offers the ability to eliminate the transcription and batching steps associated with centralized data entry. The current concept of word processing as a more automated typing pool will also give away to a decentralized approach where a personalized service will be provided by the typist to the principal. Integration of data processing with word processing will allow the automated routing of computer output documents via the word processing equipment.

4.10.4 Reduced Reliance on Paper Medium

The physical bulk of information to be filed is a compelling force towards the miniaturization of image retention in the form of microfiche or microfilm. The alternative is storage on the computer system for those items which require more frequent access. Both forms of storage offer advantages of retrievability over paper retention systems.

4.10.5 Reduced Labour Intensity

The future working environment will centre around workstations which will allow access to information through communication networks so that daily tasks will require less paperwork processing and will veer towards electronic communication.

The capture of turnaround documents also will require less paper handling through a more extensive use of optical character recognition equipment. The main advantage of this approach is the reduction of keying effort required and it will become increasingly attractive as labour costs increase.

4.10.6 Real-Time Task Completion

The scheduled nature of the batch processing activities in the computer system will have less influence on work procedures. Increased on-line usage will produce a working environment where: file updates are effected in a real-time fashion; simple changes, which currently take several days elapsed time to complete, will be accomplished in minutes; and individual staff will have more control and responsibility for performing tasks from beginning to end. Such timely execution of completely integrated work units will eliminate the ongoing and followup nature inherent in many of the current manual procedures.

4.10.7 Information For Management

Management workstations will provide timely management information, often captured as a by-product of the job-oriented workstation concept and presented graphically. To achieve this, data will be accumulated for immediate presentation and analysis, and will be constantly updated as the result of data entry at source.
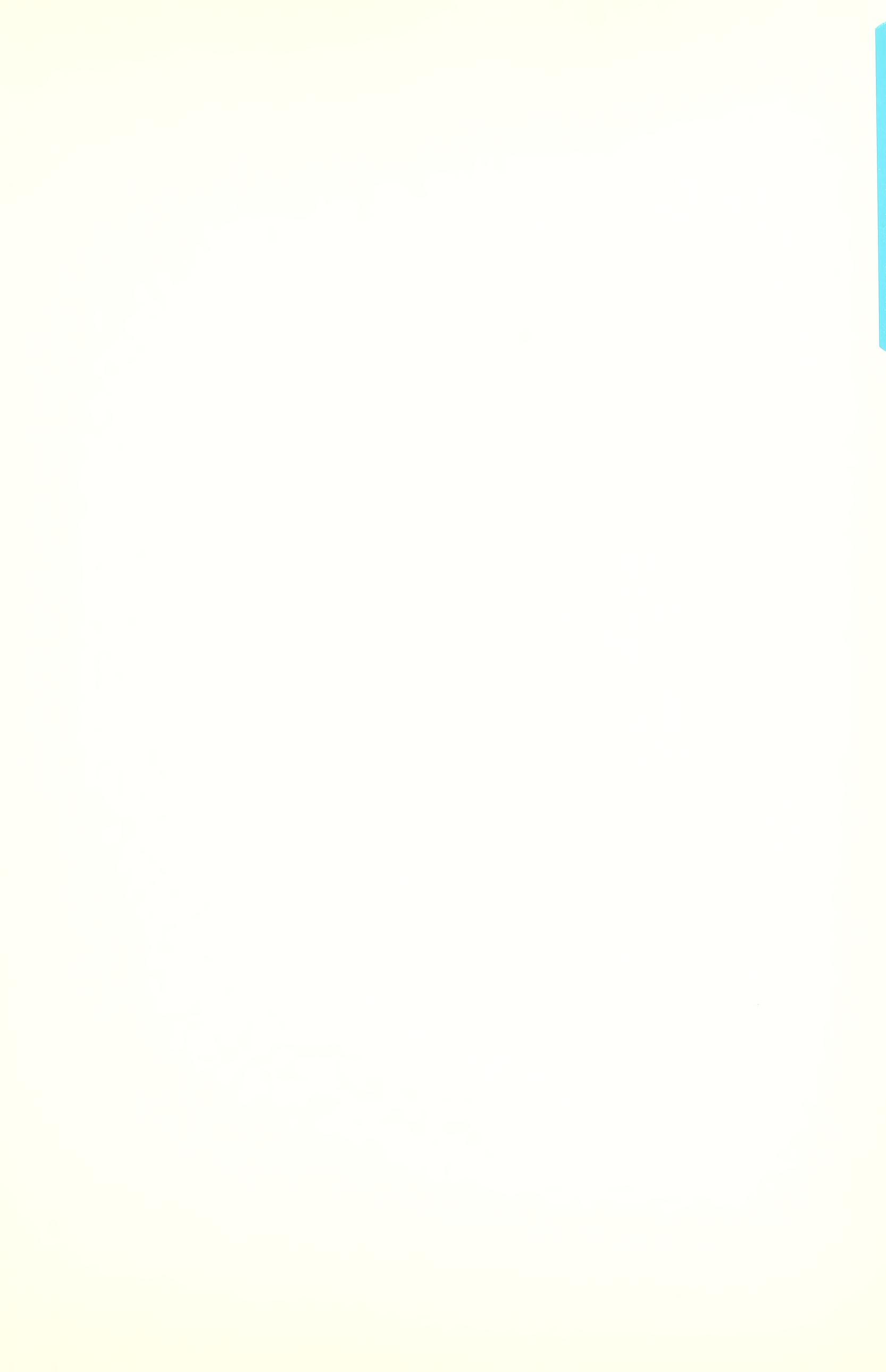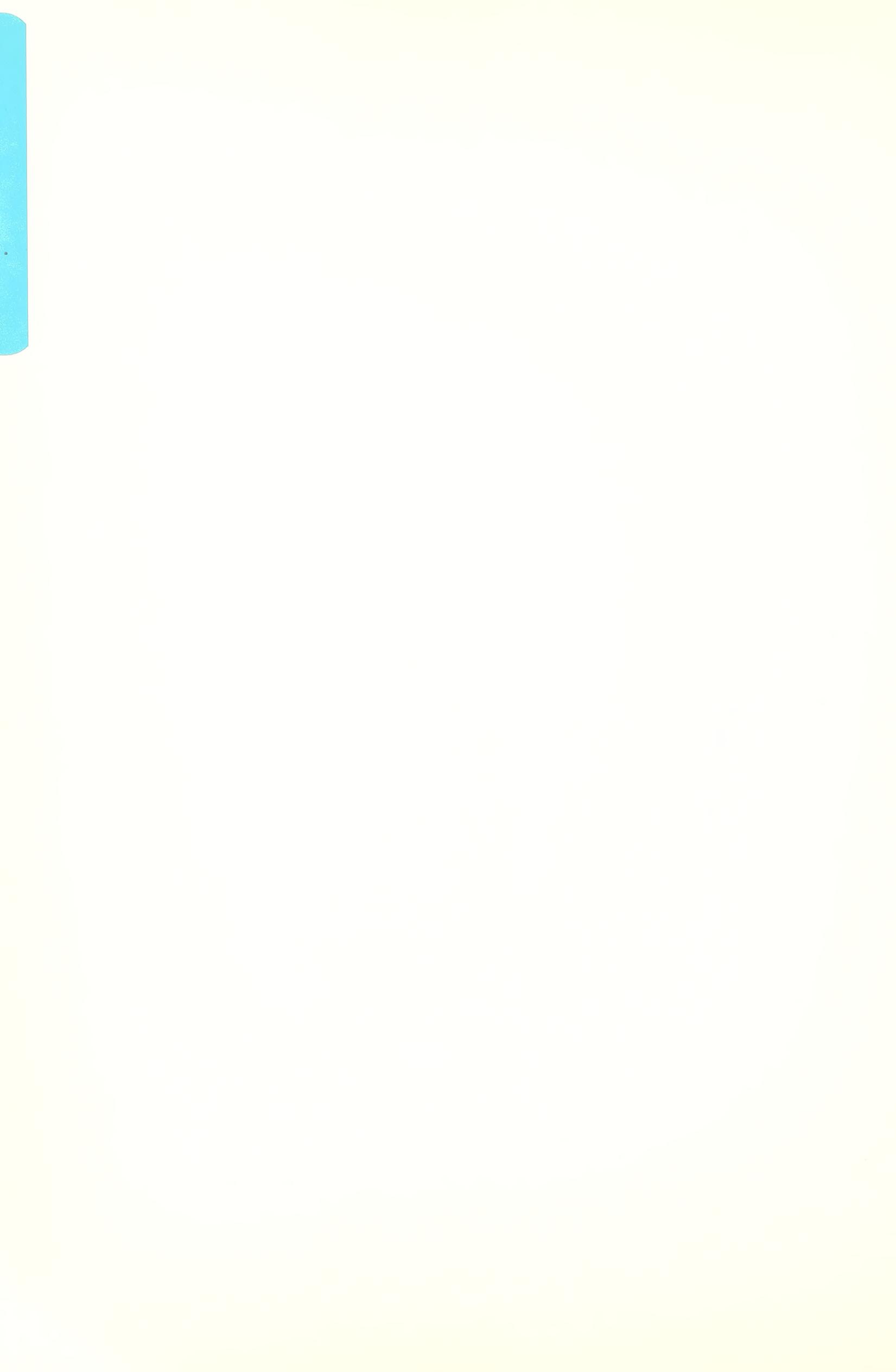
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5.0 RECOMMENDED PROCESSING ENVIRONMENT

This section describes the recommendations for each operational function within, and in support of, the Corporations Tax Branch; the effects on the automated information system environment; the consequences of these recommendations on Branch policy and legislation; and the future information and communications requirements with other branches and agencies.

Further details of the laternative processing methods considered are outlined in section 7.0 of this report.

5.1 Recommended Operational Environment

This section outlines recommendations by operational function. The functions are aligned in a manner similar to the tax model that has been adopted at the divisional level.

Where applicable, the recommendations are accompanied by procedural diagrams to illustrate the effect of the proposals on work flows and operational methods.

PAYMENTS WITH
OCR READABLE
REMITTANCE
ADVICES

PAYMENTS
WITHOUT OCR
READABLE
REMITTANCE
ADVICES

ACCOUNT
VERIFICATION
AND TAX YEAR
ALLOCATION
PROCEDURE

CRT
TERMINAL

PRINTER
TERMINAL

OCR
DATA
CAPTURE

OCR READABLE
DOCUMENTS

BATCH
UPDATE
OF MASTER

CT
DATA
BASE

INFORMATION
RETRIEVAL
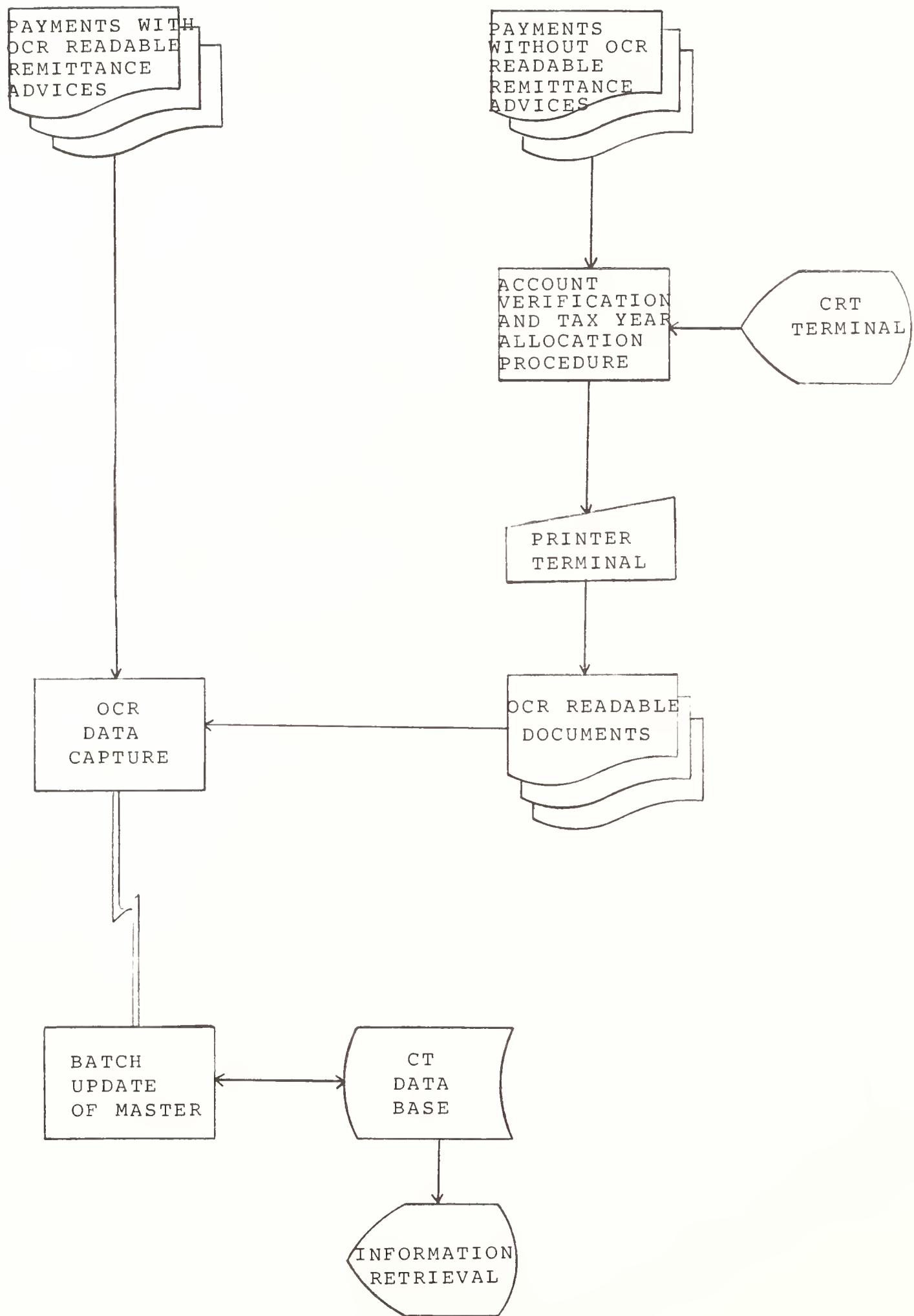
5.1.1 Revenue Generation Function

5.1.1.1 Remittance Processing

The recommendations for remittance processing centre around the main functions of: depositing payments in the bank as quickly as possible; capturing remittance data with a minimum of labour intensity; posting payment information to the computerized accounting system within hours of receipt; and allocating payments accurately to the proper account and taxation year.

To achieve these ends it is recommended that the following actions be taken to further enhance the remittance process.

Data Capture

To further apply optical character recognition methods of data capture to payments received without accompanying OCR readable remittance advices, it is recommended that a printer terminal be installed in the Revenue Processing Centre, to produce OCR readable documents for data capture purposes.

All payments received without an OCR readable remittance advice will be checked against a CRT terminal to verify correct account number and tax year allocation. As a by-product of this action an OCR readable document will be produced on the printer terminal. This procedure will eliminate the present practice of preparing hand written remittances and photocopying the top portion of the CT23 return (which acts as a remittance advice for data capture). All payments will be captured by the optical character recognition equipment and immediately forwarded by communication line to a scheduled batch update of the master file, thereby eliminating the secondary manual stream of payment data capture.

Allocation of Payments

To ensure the proper allocation of payments to the correct account and taxation year, it is recommended that the following action be taken.

The written instructions outlining proper allocation procedure should be reviewed and enhanced, if necessary, to reflect requirements of the Corporations Tax Act. This action should be followed by a training programme for Revenue Processing staff.
The on-line information retrieval system should be further developed to enhance the allocation procedure. Presentation of information should be expanded to include file analysis results, such as expected receipt dates and dollar value of payments and clear indication of arrears situations.

All payments received without an OCR readable remittance advice should be checked against the CRT terminal to determine proper allocation. The recommended data capture procedure will force the usage of the CRT terminal for such payments. Only where proper allocation is not obvious by following the above procedures should payments be coded as arrears to be allocated by the computer system.

Longer Term Recommendations

In the longer term it is recommended that direct bank deposits by taxpayers and electronic funds transfer methods be investigated and considered to further reduce labour intensity of data capture and to promote more accurate allocation of payments by taxation year.

RECOMMENDED RETURNS PROCESSING PROCEDURE
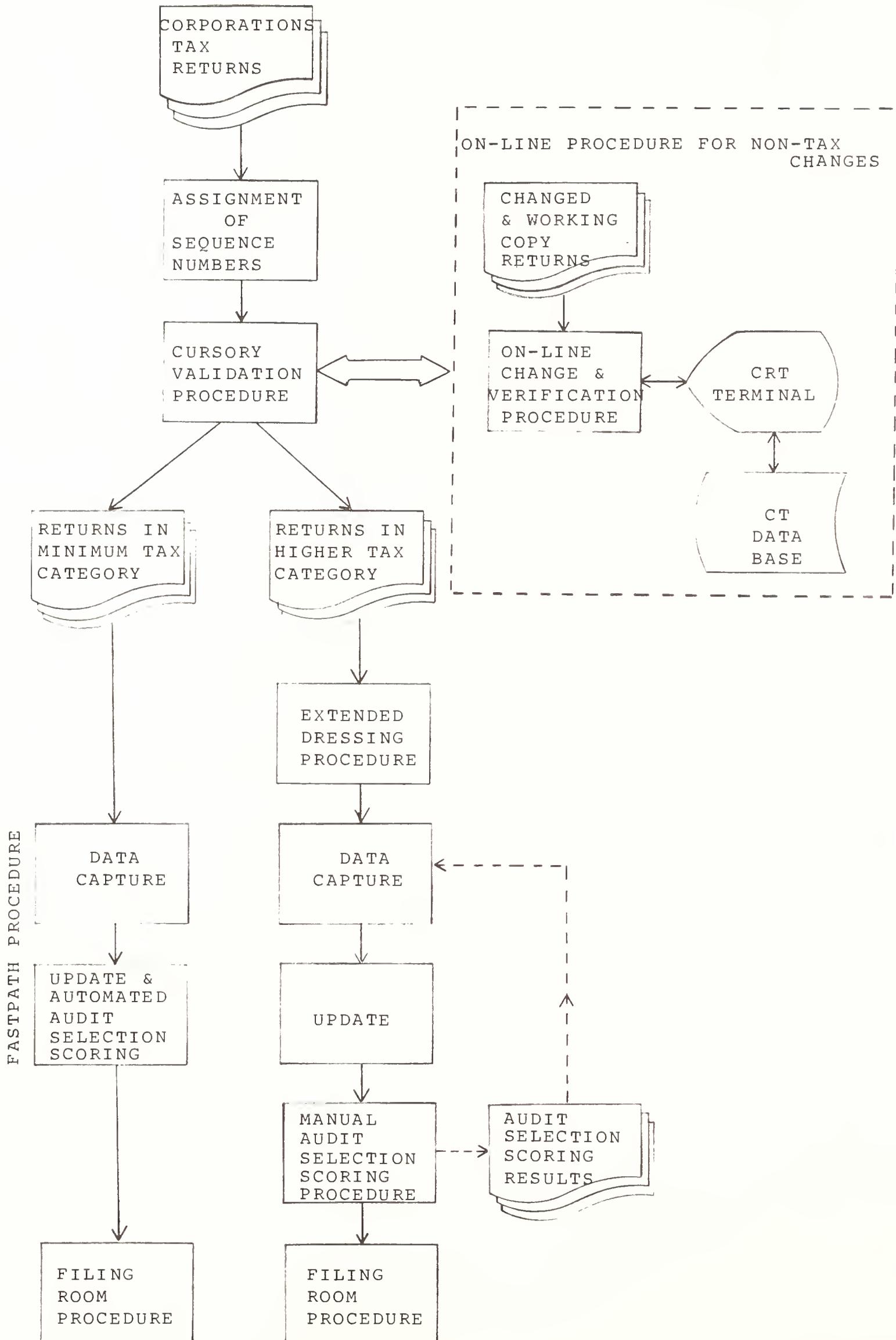
5.1.1.2   Returns Processing

The recommendations for returns processing are aimed
primarily at reducing the labour intensity involved in
preparing returns for computer acceptability and
determining potential for audit. At the tactical level
the following measures are recommended.

Segregated Processing of Returns

It is proposed that returns which have total tax
liability of $100 (or less) and gross revenue of less
than $25,000 be processed through a less labour
intensive validation procedure.

Under the revised procedure, these returns will undergo
a cursory check for completeness of the front page of
the return and for indicated revisions to non-tax
information such as address, status, and fiscal
year-end changes. After these checks, the returns will
be directly forwarded in a separate "fast path" stream
to the centralized data entry operation. Returns with
tax liability or gross revenue exceeding the above
limits will also undergo the cursory checking but, in
addition, will be diverted through an extended
validation and dressing procedure before being sent for
data entry. It is estimated that approximately 80,000
returns would be processed through the "fast path"
method, resulting in a significant reduction in the
number of returns undergoing extended validation and
dressing.

Separation of Audit Selection Scoring and Return Acceptance

It is recommended that the function of manually scoring returns for audit selection purposes be separated from the return acceptance procedures and be performed as a post return acceptance function.

Along with this measure the return validation and dressing procedures must be enhanced to include some of the screening functions presently performed by the audit staff. This proposal will accelerate the return acceptance function and allow for the creation of discrete and simplified procedures prior to return acceptance. An added benefit of this recommendation will be gained, in that return information which has already been captured in the computer system can be used to categorize returns and aid in directing audit staff efforts in audit selection scoring.

Adherence To The Self-Assessing Principle

It is recommended that the practice of making pre-billing tax adjustments of a legislative interpretive nature be discontinued in an effort to reduce the labour intensity of the return acceptance procedure.

Initial billing procedures will more closely adhere to the self-assessing principle and increased post audit activities will compensate for the immediate effects on revenue recovery of the loss of pre-billing tax adjustments. This recommendation is in accordance with the preceding proposal to separate the return acceptance function from the scoring requirement for audit selection.

The following recommendations relate to the operational aspects of the revised return acceptance and audit selection scoring functions.

Sequencing and Batching

Under the revised procedures for return acceptance it is recommended that all returns be assigned a sequence number as they enter the Tax Return Centre. This measure will replace the present practice of assigning sequence numbers in the Input/Output Section immediately prior to the data entry function. Assignment of sequence numbers at this early stage in the process would allow for increased control and ease the effort in determining return inventories for MBR purposes.

In addition to this proposal, it is recommended that a less labour intensive batching technique be employed. This will include using the computer system to control that all returns are entered into the computer system and grouping returns only in manageable batches for ease of data entry.

On-Line Changes For Non-Tax Information

In the new segregated processing environment it is recommended that returns with indication of changes to non-tax information, and returns which are not computer produced, be checked against the CRT terminal as part of the cursory validation procedure. During this process it is recommended that the capability to effect non-tax information changes be made available through the on-line system. This measure will allow for immediate updating of the data base, will eliminate the present necessity of preparing or indicating batch input transactions, and will reduce associated support function effort necessary to effect the changes in the batch update environment.

Revised Return Validation Procedures

As part of the segregated processing recommendation it is proposed that returns with total tax of $100 (or less) and gross revenue of less that $25,000 follow a "fast path" validation procedure which assures that the front page of the return is complete for computer acceptability purposes and forwards the return immediately to data entry. For returns which fall outside this category an extended dressing operation will be performed before data entry.

It is recommended that this extended dressing procedure will perform only validation which determines consistency of front page figures with those declared in the corresponding sections of the additional pages of the return and the financial statements. Verification of final tax figures should be left to the computer system and proration requirements should be automated. As stated previously, interpretation of legislation checking should be performed as a post audit function, while return acceptance procedures should adhere to the self-assessing principle.

Benefits of this approach are reflected in reduced manual labour requirements and more timely billing of returns.

Automated Audit Selection Scoring

To further complement the segregated processing
approach to return acceptance, it is recommended that
automated audit selection scoring be introduced for
those returns with total tax of $100 (or less) and
gross revenue of less than $25,000. This concept would
involve automatically assigning an audit potential
score by the computer system based on predetermined
criteria during return acceptance. Those returns
outside this category will be scored manually with the
computer system providing categorization information as
an aid in directing the manual scoring effort. To
assess the effectiveness of the automated scoring
techniques it is recommended that a small random sample
of returns in the automated category be selected for
audit on a regular basis.

Data Capture Recommendations

For the immediate future it is recommended that all
return information continue to be captured using the
centralized data entry operation. Justification of
on-line techniques at this time is diminished by the
relatively high volume of return information to be
entered and the resultant labour intensity of the
on-line operation. Optical recognition techniques,
although attractive, require further consideration for
an operation of this kind with large amounts of data.
The entry of audit selection scoring information should
also be done in the centralized environment for the
immediate future although the relatively low data entry
requirement would make it a good on-line candidate for
the future.

Longer Term Recommendations

For the longer term it is recommended that the
following proposals be pursued.
For data capture of return information, Optical
Character Recognition techniques should be further
investigated since the impact of such technology on
this particular operation would be significant in terms
of manual labour saving.

For the audit selection scoring of returns it is
recommended that a completely automated system for all
returns be established to eliminate the associated
manual effort and to increase direct auditor time for
extended audits.

5.1.1.3 Reassessment Processing

The recommendations for reassessment processing are aimed primarily at reducing the manual effort required to complete manual reassessments. A reduction in manual workload in this area would have significant impact on the administrative workload of the Branch. Recommendations are categorized according to specific types of reassessments.

Recalculation of Instalment Interest For Tax Decreases

The practice of re-opening tax years (to recalculate instalment interest for reassessment situations where a tax decrease results) has been the major hindrance to further automation since the introduction of direct reassessments to the computer system. To achieve maximum gain, from an administrative stand point, it is recommended that the policy of recalculating instalment interest be discontinued for decrease reassessments.

This recommendation is made with the realization that legislative changes are required to effect this change and that legislative change should normally be the last resort in order to ease administrative workload. In this particular instance, previous policy decisions have already eliminated the requirement to re-open tax years for instalment interest recalculation when the tax has been increased through reassessment.

The legislative change for decreases is recommended with the view that few disparities will exist under the revised rules, and maximum positive administrative effect will be achieved. Under the revision, credit interest will be given on the amount of tax decrease from the time of reassessment back to the return due

date (i.e. the time when the credit situation actually arose). Instalment considerations will remain as per the original assessment. The administrative benefits arising from this revision in legislation will be in the order of 50% reduction in the number of manually completed reassessments and will be reflected in reduced staff requirements.

Loss Carry Back Situations

In order to calculate correct credit interest for reassessments brought about by a loss carry back situation, it is necessary to establish the "tax before loss" for the reassessed year. To automate these types of reassessments it is recommended that the tax before loss figure be supplied to the computer system on the audit worksheet and the practice of coding the reassessments as manual, by the auditors, be discontinued.

This measure requires minimal procedural change since the tax before loss figure is presently entered on the audit worksheet but is not captured during the data entry operation. Benefit from this change is estimated at approximately 25% reduction in manually completed reassessments.

Remaining Manual Reassessments

For the remaining manual reassessment conditions it is recommended that the following measures be enacted. Reassessments for inactive corporations will be made direct in many cases by storing the effective dates of inactivity on the data base file. This measure will facilitate the automatic calculation of interest in many situations.

For reassessments still requiring manual completion it
is recommended that the notice of reassessment be
completed in the present manner but the printing of the
bill be accomplished through the computer system upon
receipt of the reassessment transaction input. This
measure will require changing of the reassessment
transaction to provide complete details to enable
printing of the final reassessment notice. Primary
benefit of this measure will be reduction of workload
in the word processing function.

Refund Reassessments

In order to comply with the recommended procedure for
refund processing, it is recommended that 'code 4'
turnaround documents be produced from the direct
reassessment process for refund validation in the
Accounts Section. This document will replace the
current listing of refund reassessments and will
parallel the refund procedure for direct refund
assessments. Benefits will be achieved by reduction in
manually prepared journal entries as well as making
refund procedures consistent for all direct billings.

Long Term Recommendations

In the longer term it is recommended that the on-line
system be used to assist in the reassessment process
through enhancements which assist in the calculation of
interest and which reduce the paper flows from the
batch update system. Implementation of this
recommendation should be examined based on manual
workloads remaining after implementation of the
previously recommended measures, and on the level of
sophistication of the on-line system in other Branch
functions at the time of consideration.

RECOMMENDED ASSESSMENT PROCESSING PROCEDURE
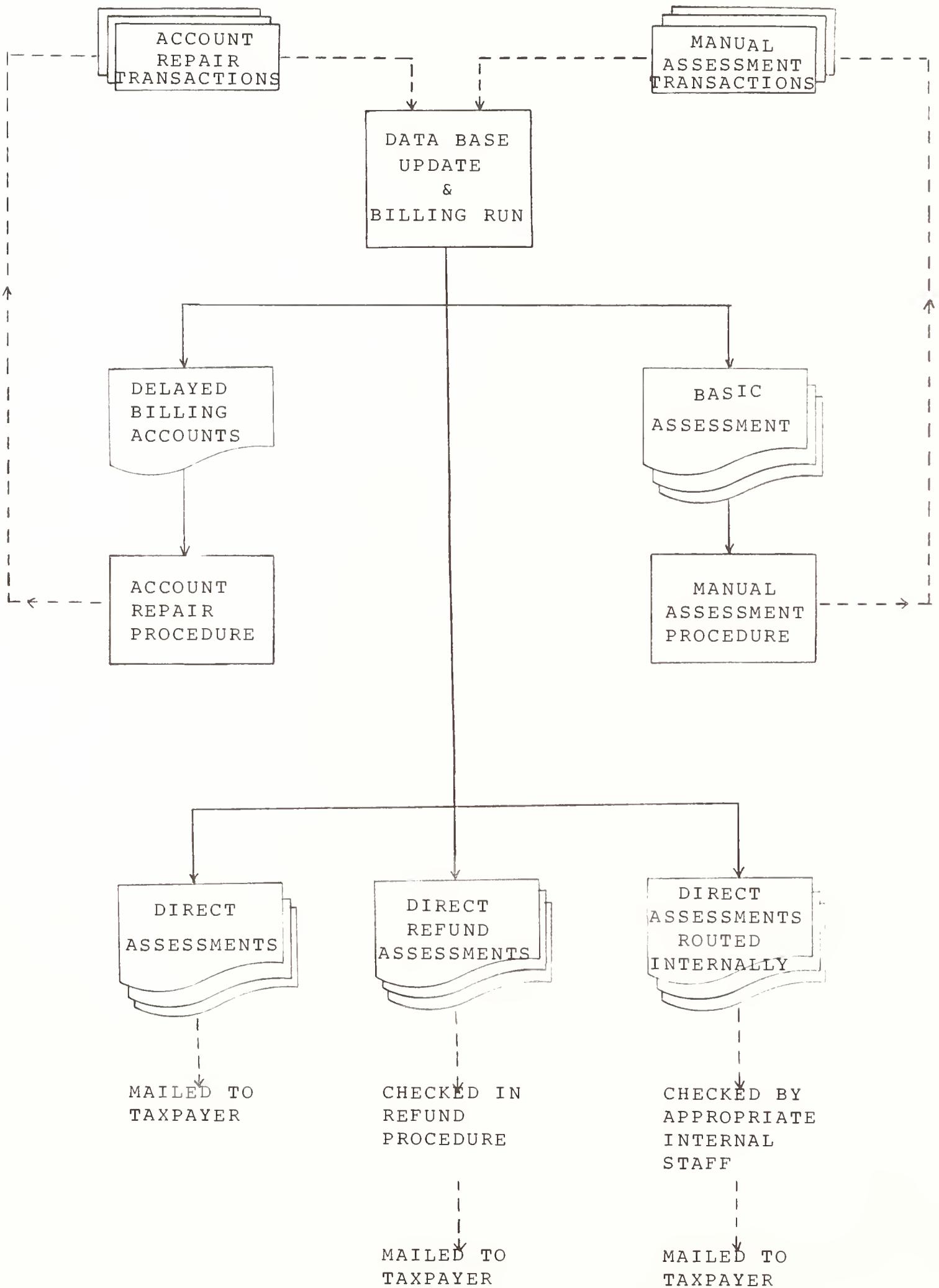
5.1.1.4 Assessment Processing

Although the number of original assessments requiring manual completion is small compared to the overall number of bills produced, the following recommendations are made in an effort to further reduce the number of manual billings.

Assessing of Inactive Accounts

It is recommended that the data base file be extended to include the effective dates of inactivity and that these dates be used in the billing process to calculate the correct instalment interest. This measure would eliminate a large number of the manually prepared assessments and would also provide useful information to other sections of the Branch.

Routing Assessments Within The Branch

It is recommended that the policy of producing manual assessments for accounts which are of special interest to various areas in the Branch be discontinued and replaced with a revised procedure of producing direct bills that are automatically routed to the interested section through the assignment of special output keys by the computer system. The present practice facilitates the matching of assessment documents with other correspondence and the necessity to check some assessments before mailing, but creates unnecessary work for the Accounts Section staff in the form of interest calculations to complete the bill.

This measure, coupled with the storage of dates of inactivity in the computer system will further reduce the number of manually prepared bills.

Unnecessary Conditions

It is recommended that the practice of producing a manual assessment when reassessment billing for the account has occurred in the same computer run be discontinued. In the present environment of more frequent transaction updating, coincidental reassessment and assessment billings only occur in those runs which combine both transaction and file scanning activities. Consequently the matching of the two billing documents is no longer a comprehensive practice.

Delayed Billing

For those file conditions which presently dictate production of a manual bill (e.g. overpayments residing in assessed years and the lack of interest calculation dates), it is recommended that a system of delayed billing be implemented. Under this system warnings will be given in each billing run that manual bills will be produced in the subsequent billing run unless the basic bill conditions are rectified through transaction input. This will allow the Accounts Section staff a chance to prepare an account for direct billing and avoid the completion of a manual bill. The measure would be especially effective for those accounts with overpayments in assessed years.

Along with inactive accounts, overpayment conditions
presently account for a majority of manual assessments.

Computer Printed Assessments

For those remaining assessments which require manual
completion, it is recommended that the Accounts Section
manually complete the final billing figures and, by
indicating these figures to the computer system, effect
the printing of the assessment notice. This procedure
will involve changes to the transaction input so that
the assessment notice could be completely printed from
the information supplied in the transaction. Benefit
will be derived from the elimination of typing effort
and reduction in time presently expended on matching
documents.

RECOMMENDED REFUND PROCEDURE
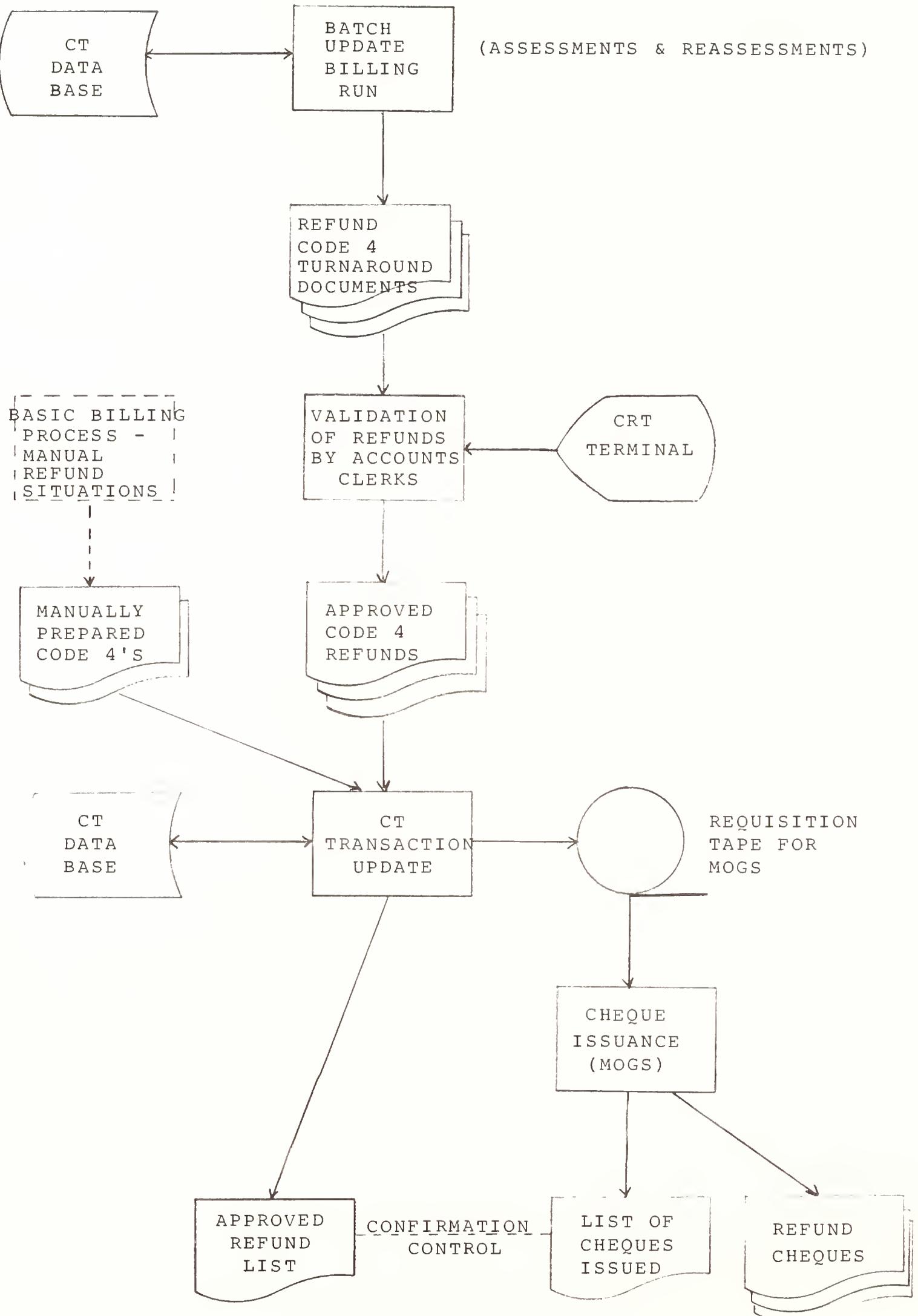
5.1.1.5 Refund Processing

Recommendations for refund processing are aimed at reducing the manual effort expended in two main areas: validation of the refund in the Accounts Section, and requisition of the refund cheques through the interface with the Ministry of Government Services.

Validation of Refunds

It is recommended that the Accounts Section reduce the amount of validation activity, by pursuing a policy whereby the approval of the code 4 journal entry constitutes the approval of the refund. This procedure will involve producing a code 4 turnaround document when a direct refund assessment or reassesment is produced in the computer system billing process. Validation of the refund situation will be performed by the refund clerk and the code 4 journal submitted to the update system upon approval. This action will result in the production of a refund voucher for cheque requisition. No further validation will be performed after the code 4 journal is submitted to the system.

Cheque Requisition

It is recommended that the cheque requisition procedures be automated by replacing the present paper vouchers with magnetic tape. Cheque requisition information will be produced as the result

of code 4 journals entering the update system and will be forwarded to the Ministry of Government Services on magnetic tape in a format which conforms to requirements of the standard cheque writing system.

This procedure will eliminate the manual preparation of vouchers and eliminate the present labour intensive data capture procedure at the Ministry of Government Services. Verification of cheques issued will be effected through listings produced from both the Corporations Tax system and the standard cheque writing system.

Longer Term Recommendation

In the longer term it is recommended that the validation procedure be further automated by replacing the paper code 4 turnaround documents with a file which is accessible through the on-line system. This will allow each code 4 journal to be validated by using a CRT terminal and will eliminate the paper oriented procedure and data capture requirements inherent in the current processing.

5.1.1.6   Inquiry Processing

The recommendations for the Correspondence and Inquiry function are aimed at the two main objectives of: providing efficient service to taxpaper inquiries while reducing manual effort; and reducing the number of taxpayer inquiries through more accurate accounting practices and expanded, meaningful presentation of accounting information.

To achieve the objective of efficient service the following measures are recommended.

Extended On-Line Information

It is recommended that historical information reflecting all assessment and reassessment activities, as well as amended return information, be retained on the on-line information retrieval system. Transaction data should also be aligned with retention of billing information. Coupled with the extension of on-line information a CRT terminal should be made available to each Correspondence and Inquiry staff member.

The benefits of this expansion will be reflected in more efficient service and the extended information could be used to reproduce interest calculations and produce statements of account automatically.

Automated Production of Response Documents

It is also recommended that facilities be provided through the on-line system to produce interest calculations and statements of account. This facility will make use of extended data base information, and although it may not satisfy all requirements of information requests, the manual workload and time presently required to prepare these documents will be greatly reduced. Particular benefits will occur in more efficient service to taxpayer requests and reduced access to hardcopy file information.

On-line Updating Of Journal Entries

To further reduce the manual effort associated with
inquiries and to complement the immediate nature of the
Correspondence and Inquiry operation, it is recommended
that on-line updating for journal entries be introduced
to this area. This will allow staff to make immediate
changes that result from taxpayer inquiries, while
reducing the associated workload in the Input/Output
section and data entry operation. An added benefit
will be immediate verification of intended changes.
The experience and knowledge of the staff in this area
make it ideal for a pilot project for on-line updating
of accounting information.

To address the objective of reducing taxpaper inquiries
through accurate accounting and effective accounting
presentation the following recommendations are made.

Improved Cash Allocation Procedure

It is recommended that the cash allocation procedure be
improved in the Revenue Processing Centre through more
efficient use of the on-line system and through
enhanced education and training programmes. These
measures are further outlined in the recommendations
for remittance processing.

Enhanced Accounting Presentation

To promote clearer taxpayer understanding of his payment accounting position and the results of the billing process, it is recommended that the remittance programme be expanded to include a schedule of payment information, and that the assessment and reassessment notices be altered to reflect a more standard accounting presentation.

The remittance advices sent to the taxpayer should reflect information of payments made to-date for the current tax year, as well as arrears or credits in other tax years. This will allow the taxpayer to verify his accounting position and correct erroneous situations, prior to billing.

The billing documents should provide better presentation of arrears' balances, taxes assessed, interest and penalties charged, refunds made and closing tax year balances. Also the above information should be presented in a standard debit and credit columnar format, with provision for extended messages of explanation. The purpose of this measure is to promote taxpayer understanding of the billing results and thereby reduce inquiries for extended explanation.

Longer Term Recommendation

In the longer term it is recommended that the inquiry function become part of a Branch-wide information service that will not only react to taxpayer inquiries but also assume a proactive role in monitoring taxpayer information requirements and disseminating information.

5.1.1.7 New Company Processing

The recommendations for new company processing are aimed at establishing complete new company information for Corporations Tax Branch computer and hardcopy files in a more timely fashion. Also included are measures to ensure tax roll integrity for corporations whose jurisdictions are not confined to Ontario.

Interface With MCCR

The interface with the Ministry of Consumer and Commercial Relations for setting up Ontario corporations is presently adequate. For notification of Dominion corporations operating in Ontario it is recommended that a policy of increased communications at the management level to outline Corporations Tax requirements be pursued between the two Ministries.

As an overall policy in this area it is recommended that the Ministry of Consumer and Commercial Relations continue to be the primary source for new company information.

Acquisition Of Initial Taxpayer Information

In order to acquire quickly and accurately new corporation identification and operating information, it is recommended that two measures be pursued. It is proposed that a review be performed with MCCR to evaluate the information required from the taxpayer, or his representative, at initial incorporation time and to expand it if necessary.

It is also recommended that the post incorporation questionnaire sent to the taxpayer by Corporations Tax Branch be reviewed for content and effectiveness. Pursuing these two measures will enhance the initial set up procedures by ensuring that information is obtained from the taxpayer in a timely and efficient manner.

On-Line Updating Of Tax Roll Changes

It is recommended that on-line updating capabilities be provided in the Tax Roll Section to effect additions and changes to new corporation identification information. Significant benefit will be achieved by eliminating the time consuming transcription, batching, data entry, and confirmation procedures, associated with the batch update environment.

Longer Term Recommendation

In the longer term it is recommended that electronic data from other jurisdictions such as Revenue Canada be used for periodic matching against Corporations Tax Branch files to ensure completeness of Dominion corporation information. Such practices should be employed only as a checking device and not as a primary source of new company information.

5.1.1.8 Cancellation Processing

The cancellation process was traditionally intended to provide a method of removing inactive corporations from the tax roll. Recently, with increasing workloads in the default and collection functions, the cancellation process has become an attractive enforcement mechanism. The following recommendations further this concept, in addition to outlining operational improvements in the Tax Roll Section.

Cancellation As A Compliance Mechanism

It is recommended that the cancellation programme be accelerated in its cyclical application and replace the second set of default letters and collection letters, where a corporation has not made indication of compliance.

In the default process this will mean that a corporation receives the normal default letters during the first year of default. If compliance is not indicated by the time the second year's return is due, a warning letter will be issued indicating that unless compliance is made, cancellation will be initiated. Unless the default returns are filed, the cancellation letter programme will begin. Presently the corporation receives a second set of default letters before cancellation action is taken.

For collections, the cancellation cycle will begin if the corporation is in the manual stage of collection action and more debt is accumulated without compliance

by the taxpayer. The application of this concept to collection accounts would require more caution than in the case of default because of the variable timing in the accumulation of debts.

Benefit from the above recommendations will be reflected in fewer non-compliance accounts and the measures will greatly increase the effectiveness of compliance enforcement.

To improve the operational aspects of the cancellation programme in the Tax Roll Section the following recommendations are made.

Automated Federal Interface

It is recommended that the present practice of providing Revenue Canada with advisement of cancellation proceedings be automated to eliminate the associated paper handling.

On-Line Entry of Cancellation Information

It is recommended that provision be made to allow on-line entry of cancellation change input in the Tax Roll Section. This measure will reduce the manual effort and time associated with preparation of transaction input for the scheduled batch update and allow the Tax Roll staff to complete and verify cancellation actions quickly.

5.1.1.9 Taxpayer Initiated Removals/Reinstatements

Recommendations for processing taxpayer initiated removals and reinstatements deal with improvements to the present manual procedures.

Automated Consent And Followup Procedures

It is recommended that the computer system be used to produce consent letters and to initiate followup actions based on the on-line entry of account status changes and effective dates of status revision. Under the revised procedure taxpayer requirement letters will be produced by the computer system, notification of receipt of returns and payments will be automated, followup action will be initiated when consent periods lapse, and final consent letters will be computer produced.

The prime benefits of such a programme will be elimination of repetitive manual checking for taxpayer compliance with consent requirements, reduction in word processing activities, and reduced management time spent in signing consent letters. In addition, the on-line updating of account status changes will reduce the associated clerical and support function activities, and effective dates of status changes will help reduce manual billing activities.

Amalgamated Accounts And Bankruptcies

These types of taxpayer removals are not subject to the above consent and followup procedures; however the computer storage of effective dates of inactivity should also be pursued in these cases. As well, the identification account number of the resultant corporation should be stored in the case of amalgamated companies to provide cross-reference capabilities. These changes to account information should be effected through the on-line system.

5.1.2 Revenue Control Function

This section outlines recommendations for those
functions which are designated as revenue control
functions in the divisional tax model.

5.1.2.1 Collections Processsing

Recommendations for the collection function are aimed
at optimizing the efforts of the present Collection
staff, and providing incentives for corporations to
comply with their tax obligations.

At a tactical level the following measures are
recommended.

Selective Manual Followup Programme

It is recommended that the present practice of manually
working only those accounts with larger receivables be
continued. To complement this approach, it is
recommended that the computer collections system be
re-aligned to provide additional automatic letter
followup for those accounts which are not worked
manually. This redesign will eliminate the production
of those collection worksheets not presently used by
the Collection staff and will provide increased
followup action of all collection accounts.

Accelerated Cancellation Programme

To complement the selective manual followup programme,
and to increase the effectiveness of followup action in
general, it is recommended that the cancellation
process be accelerated for non-compliance accounts.

This measure will apply both to those corporations not manually worked and to those select manually worked corporations which have not given any indication of compliance as a result of the regular collection letter actions.

Benefits of this measure will include the elimination of redundant collection letters. More importantly it will provide the Corporations Tax Branch with an effective immediate followup tool to the collection letter actions that would put the onus on the taxpayer to take some action of compliance.

Application of Payments To Arrears

It is recommended that a policy be adopted for arrears accounts whereby any instalment payment made by the corporation will be directed against arrears after sufficient warning has been given to the corporation. This policy will involve reallocating previously paid instalment amounts to arrears in assessed taxation years to the detriment of the current year's balance. No compensation or credit interest will be allowed when the depleted taxation year is assessed. This measure will keep collection action on a more current taxation year basis and will be especially effective in resolving arrears situations arising from reassessment activities.

Longer Term Tactical Measures

In the longer term it is recommended that penalties and interest for non-payment of taxes be increased to levels which reflect interest rates in the private sector. Until this is done there will be no clear incentive for corporations to comply with the legislative requirements and the lack of incentive will be reflected in increased administrative workload.

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Furthermore, the establishment of a Revenue Division collection agency will provide additional tools for compliance enforcement through the use of district office locations for more immediate taxpayer contact and through co-operation of other branches in effecting compliance. For instance, compliance could be promoted by the suspension of priviledges under one of the other Acts administered by the Revenue Division.

Additional recommendations pertaining to the operational aspects of the Collection Section are as follows.

Daily Updating Of Cash

It is recommended that daily updating of cash transactions be implemented as a means of providing the Collection Section with up to date accounting information.

Automated Aids To Manual Followup Actions

It is recommended that the on-line system be used to record information pertaining to expected manual followup actions. This will consist of the collection staff indicating to the computer system when a followup action is required, and the nature of that action. The system will indicate daily which accounts require attention and will serve as an aid in directing collection effort. It is recommended also that the capability to update collection codes on the data base be made available through the on-line system. Implementation of these measures should minimize data capture requirements if they are to act as aids rather than hindrances in the normal collection activities.

Longer Term Operational Considerations

In the longer term it would be beneficial to the
Collection Section to have increased access via CRT to
other Revenue Division information and possibly to
other government information. This measure would
reduce the time and manual effort presently expended in
compiling collection profiles for delinquent
corporations and would facilitate establishing the
accurate addresses of the principal officers of
delinquent companies.

5.1.2.2 Default Processing

Recommendations for the default function are similar to those for collections in that they are aimed at optimizing the efforts of available staff and providing incentives for corporations to comply with the legislative requirements.

At the tactical level the following measures are recommended.

Harsher Penalties For Non-Compliance

It is recommended that penalties for non-filing be increased to the point where they act as a deterrent against non-filing or late filing of returns. Revised penalties could be $25 minimum and $2,000 maximum charges rather than the present $2.50 minimum and $500 maximum. The ineffectiveness of the current penalties are reflected in the approximate 30% of all corporations that are late in filing returns. Increased penalties will be the most effective measure in eliminating the administrative workload associated with the large number of non-compliance corporations.

Accelerated Cancellation Programme

It is recommended that the cancellation letter programme be accelerated to act as an immediate followup to default action for those corporations which give no indication of compliance. Under this concept the cancellation letter programme will replace the redundant default letters presently sent to corporations which are entering the second year of default. The reminder letter sent prior to the due date of the second year return will be replaced by a letter warning of pending cancellation proceedings for

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those companies which have not yet filed the previous year's return. Implementation of this measure will provide benefits of pressing the company to resolve the compliance situation in order to avoid cancellation.

Selective Manual Followup Programme

It is recommended that the current policy of only manually following up larger default corporations be continued. To complement this concept the computer system design should be altered to correspond to the manual procedure. This will involve eliminating the production of worksheets not used in the manual process and probably increasing the number of automated letters sent to those corporations which are not worked manually.

Arbitrary Assessments

It is recommended that the option of arbitrarily assessing corporations which are in default be used, but only for larger corporations where the assessment amount will act as an incentive to comply. In some particular cases the use of an arbitrary assessment may force compliance but for smaller corporations it does not appear to be worthwhile.

Longer Term Tactical Considerations

In the longer term the establishment of a compliance agency at the Division level would provide advantages. The use of district office locations and personnel to increase the immediate taxpayer contact and co-ordination between branches in carrying out compliance actions will be beneficial.

Following are operational level recommendations for the default function.

Automated Aids To Manual Followup Actions

It is recommended that the on-line system be used to record information pertaining to expected manual followup actions. This will consist of the default staff indicating to the computer system when a followup action is required, and the nature of the action. The computer will provide daily information indicating which accounts require action and will serve as an aid in directing default effort. Implementation of this measure should be designed so as not to hinder normal default activities.

On-Line Indication Of Receipt Of Default Returns

To complement the above proposal it is recommended that as part of the return acceptance procedure in the Tax Return Centre the on-line system be used to indicate the receipt of default returns. This measure will eliminate the present practice of routing default returns to the Default area and will provide more immediate information for removing accounts from further followup action.

Longer Term Operational Considerations

In the longer term it will be beneficial to the Default area to have increased access via CRT to both other Revenue Division and government information. The measure would aid in establishing profiles on delinquent companies and in providing address information of the principal officers of the corporation.

5.1.2.3 Non-discretionary Audit Processing

The recommendations for non-discretionary audit processing are aimed toward reducing the amount of direct auditor effort presently required to effect the reasessment. The recommendations deal firstly with amended return and loss carry back situations and then separately with federal notices of reassessment.

Amended Returns And Loss Carry Backs

It is recommended that reassessment billing be automated for amended returns and loss carry back situations, based on a policy of accepting the taxpayers' revised estimate of taxes.

Large tax changes will be segregated and reviewed by the Audit staff for accuracy. This measure will involve processing the majority of these returns in a similar manner to original returns. Instead of the present procedure (whereby the acceptance of these returns by the computer system results in the account being added to the audit inventory, subsequent production of an audit worksheet, and auditor review) amended and loss back returns will be automatically reassessed upon initial acceptance of the return.

Benefits will be gained by decreasing the amount of auditor time presently spent in processing these returns, reallocation of such time to extended audits, and the accomodation of future volumes of adjustments without corresponding increases in staff.

Federal Notices of Reassessment

For federal notices of reassessment it is proposed that a front-end segregation procedure be implemented to separate those notices which involve legislative

differences from those where the legislation corresponds. Where legislative differences exist, the federal notice will be reviewed by the audit area in accordance with the present practice. Where no differences are apparent, the federal notice will automatically generate a notice of reasssessment upon computer acceptance. This measure will allow more audit resources to be allocated to extended audits.

Longer Term Recommendations

In the longer term it is recommended that the reasons for change on the federal reassessment tape be used to effect the segregation of federal notices of reassessment by legislative differences automatically. Employment of this method will have a significant effect on the amount of manpower required to process federal notices of reasssessment.

5.1.2.4 Extended And Field Audit Processing

The recommendations for the extended and field audit functions are aimed at two areas: increasing the amount of direct auditor time spent on extended and field auditing; and reducing the amount of clerical effort associated with the audit process.

The measures proposed for increasing the amount of direct auditor time do not apply to the extended and field audit functions directly, but rather to the activities which presently divert auditor time from these functions.

Automated Audit Selection

It is recommended for the immediate future that all corporations paying total tax of $100 (or less) and with a gross revenue of less than $25,000 be automatically scored for audit selection by the computer system. In the longer term it is proposed that all corporations be automatically scored for audit selection according to criteria supplied to the computer system. These measures will release audit complement from return acceptance procedures and allow redeployment of audit resources to the extended and field audit functions.

Automation of Non-discretionary Audits

It is recommended that amended and loss carry back returns be automated so that reassessment billing occurs at the time of initial return acceptance. This billing will adhere closely to the self-assessing principle, except for large tax changes, and would further release audit resources to the more extensive audit activities.

It is also recommended that federal notices of reassessment be partially automated by reassessing automatically (upon computer acceptance of the federal notice) those corporations where no differences in legislation apply to the federal reassessment. This will again allow reallocation of audit resources to more extensive auditing.

Creation Of A Branch-wide Information Service

In the longer term it is recommended that a Branch-wide information service be established to deal with taxpayer inquiries. This measure will help reduce the amount of interruption in the Audit area.

To decrease the amount of clerical effort required in the audit process the following measures are proposed.

On-Line Cancellation Of Audit Worksheets

It is recommended that the capability to cancel audit worksheets through the on-line system be established. This will reduce the amount of clerical effort presently required of the support functions.

Reduction In The Use Of Audit Working Documents

It is recommended that clerical effort presently required to complete the audit worksheet and other audit working papers be reduced by consolidation where applicable and by elimination of redundant data gathering and transcription practices. This measure will significantly reduce the clerical effort presently expended by the audit and group clerk staff.

Reliance On Automated Reporting System

It is recommended that the automated system be used for management statistical information as a measure to reduce the effort presently required to gather and present auditor performance results. Along with this proposal it is recommended that the system design be reviewed, and enhanced if necessary, as to the time reporting requirements for auditor time statistics. Enhancement in this area will significantly reduce the amount of manual effort associated with MBR data gathering and manipulation.

5.1.2.5 <u>Liens Processing</u>

In considering alternatives which would aid in coping with the Liens Section's workload it became apparent, as it has in the past, that little can be done in the way of further automation to offset significantly the effects of increasing workloads.

The nature of the current Liens operation requires, as a compliance safeguard, requests for lien clearance for all transactions involving property owned by a corporation. As a result of this requirement over 200,000 requests are currently processed each year. Of these, over 90% are cleared without a lien being claimed. The liens which are claimed bring in approximately $14 million (gross) to the Branch annually, but about half of this amount is subsequently refunded and a further portion of the remaining $7 million would have been realized by normal collection activities. In addition, the restricted searching policies forced by constraints have reduced the effectiveness of the operation. Based on these considerations the following recommendations are made.

<u>Elimination Of The Liens Function</u>

It is recommended that the Liens function be eliminated in its current form and that the effort presently employed in this function be directed to increase the strength of other revenue control functions. The collection and default areas should continue to use the lien tool to force compliance of deliquent companies when the transferral of property of such companies can be readily established.

Barring the elimination of the Liens operation it would appear that some minor operational measures could be implemented. Extension of the on-line retrieval system to include effective dates of inactivity for inactive

corporations, standardization of a lien clearance
request form, and a proactive bulletin information
programme to inform lawyers of the current lien
requirements, could be effected; but the impact of such
measures would not significantly affect increasing
workload problems in the Section over the long term.

5.1.2.6 Tax Roll Investigations Processing

Recommendations for the Investigations area of Tax Roll are aimed at reducing the manual effort associated with making tax roll changes through the batch update system, automating followup actions and providing additional aids for maintaining the integrity of the tax roll.

On-Line Updating of Tax Roll Changes

It is recommended, as in other Tax Roll functions, that on-line updating capabilities be introduced to effect tax roll changes to the data base file. Benefits from this measure centre around reduced clerical and support effort associated with effecting these changes in the batch update environment.

Automated 'K' Status Followup

It is recommended that the letter programme for 'K' status corporations be automated. Automation of this function will make the continuance of the questionnaire review programme feasible; whereas it is difficult to justify a manual procedure. The benefit, although not significant, will be to increase the overall enforcement visibility of the Branch.

Longer Term Recommendations

In the longer term, greater use should be made of electronic data files from other jurisdictions to verify tax roll integrity. To facilitate this policy, the establishment of a computer index by federal account number may be necessary. An index of this kind would also aid in the daily investigation process by providing on-line access to Corporations Tax accounts by federal account number and would complement the present KWIC index searching facilities.

5.1.3   Support Function

This section outlines the recommended roles for the
support function activities of data capture, filing,
and word processing, as they contribute to the overall
future processing environment of the Branch.

5.1.3.1 Data Capture

The future characteristics of the data capture function
will be affected mainly by two considerations: a
tendency to move away from the traditionally batch
processing environment in many operational functions;
and the need to reduce the labour intensive keying
efforts presently required for capturing most
information.

Centralized Data Entry

It is recommended that the centralized data entry
keying operation be retained in the immediate future
for those inputs which are high volume and have high
data content.   This will include such inputs as
returns, audit worksheets and certain journal entry
transactions.   However the facility to capture all
transactions in this manner should be retained as the
back up to all other methods of data capture.

On-line Entry At Source

To reduce transcription to paper, batching, keying, and
confirmation efforts, it is recommended that the
on-line system be utilized to enter low volume and low
data content transactions.   This will encompass a
variety of transactions including statistical changes,
address changes, cancellation input, collection input,

objection input, audit change input and some journal entries. In addition to the reduced support function activities, this measure will allow changes to the computer files to be made on a real-time basis and will allow procedural tasks to be completed immediately. Implementation of the on-line concept could take two forms: on-line entry with immediate updating of the data base; or on-line entry with delayed updating of the main file.

Optical Character Recognition Techniques

For the immediate future, it is recommended that all remittance data be captured through the optical character recognition equipment in the Revenue Processing Centre.

In the longer term, OCR techniques should be employed as much as possible for capturing high volume inputs presently processed through the manually keyed centralized data entry operation. Significant reduction in manpower requirements will result from this method of capturing data.

5.1.3.2 Filing

The recommendation for the filing function is aimed at:
improving the filing service to the level required by
other Branch functions; maintaining this level of
service in the future under the pressures of increasing
workloads and constrained complement; and reducing the
filing space required now and in the future.

Filing Methodology

It is recommended that the current paper files required
for all corporations be microfilmed and placed in
microfilm jackets. The microfilm jackets should never
leave the central file room and copies of the jackets
should be made available for reference upon request.
An exception to this process will be those selected
documents which are required for the extended and field
audit functions. Returns, financial statements, and
schedules, should be retained in paper form (in
addition to the microfiche) for only those corporations
with a high potential for extended and field audit.
All other documents should be destroyed after
microfilming.

Improved request service would result from this measure
since the master file would never leave the file room.
File jackets could be duplicated quickly and
inexpensively and be provided to the operational
sections as required. In addition, the filing space
would be significantly reduced (by over 5,000 square
feet) and it is projected that the present complement
of the filing room could maintain the improved service
for another five years, even though the number of
corporation files are growing at approximately 10% to
12% per year.

Retention of Filed Material

It is further recommended that the retention period for
Corporations Tax documents be reduced from fifty years
to twelve years.

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5.1.3.3 Word Processing

It is recommended that word processing technology continue to be used as an aid to producing high volume standard correspondence.

To complement this environment and to further reduce typing effort, it is recommended that advantage be taken of communication links to data processing files when these facilities become available and reliable. This type of communication link will allow access to such information as names and addresses and will aid in the production of correspondence of a personal nature.

As a further proposal, it is recommended that the assessment and reassessment notices presently produced on the word processing equipment be printed by the computer system as a result of transaction input. Efforts should also be made to reduce the typing requirements for statements of adjustments accompanying the reassessment notices through the elimination of unnecessary statements and the standardization of those statements required.

These measures will reduce manual typing effort, allow more concentration to be placed on the production of personalized correspondence, and focus more attention toward individual staff typing needs.

5.1.4 Appeals Function

The following section outlines recommendations for the Objection and Appeals function.

5.1.4.1 Appeals Processing

The recommendations for the Appeals function promote a more autonomous data processing operation for the newly formed branch. Immediate and longer term measures are indicated.

Provision of On-Line Facilities

In consideration of the long term interests of the Corporations Tax Branch, it is recommended that the Appeals data processing operations be made as autonomous as possible by providing on-line information retrieval and updating capabilities to the Appeals Branch.

This facility will allow the Appeals Branch to function independently of the Corporations Tax Branch in maintaining the objection data which presently resides on the main Corporations Tax data base.
The on-line system will allow information retrieval of Corporations Tax accounts and accept objection input transactions for immediate update of the data base. Minimal extra system costs will be incurred, and will be offset by decreased manual requirements in the Corporations Tax Branch to process objection transactions through the batch update system and to satisfy information needs.

Longer Term Recommendations

It is recommended that the monthly objection reporting system be separated from Corporations Tax processing in concurrence with the larger objective of eliminating the monthly batch statistical run. This recommendation achieves independence in processing but cannot be justified on its own merits.

It is also recommended that original taxpayer information be retained in the Corporations Tax Branch for internal access and that the practice of supplying original return documents to the Appeals Branch, for inclusion in objection files, be discontinued. Conversion of the Corporations Tax filing system to a micro-recording methodology will facilitate the copying requirements and make such a policy feasible.

5.1.5 Feedback Function

This section outlines the recommendations for the feedback function of financial data analysis.

5.1.5.1 FDA Processing

The recommendations for Financial Data Analysis processing address the continuance of the function itself and the data capture consideration for the FDA worksheets.

Continuance of the FDA Function

When the value of the FDA programme to the Corporations Tax Branch itself is taken into consideration it is recommended that the function be discontinued. This will result in reduced data processing costs and allow the FDA complement positions to be reallocated to other Branch functions.

Barring total elimination it is recommended that a reduced FDA function be established which would entail capturing a limited number of extra data items as part of returns acceptance. This extra information would be captured for all accounts and would be used for the analysis function.

It is also recommended that any FDA programme administered by the Corporations Tax Branch be financed by the requesting agencies and be staffed by part-time or temporary help.

Data Capture Recommendations

It is recommended that the centralized data entry method of capturing FDA information be continued, if the total programme is not eliminated.

5.1.6   Management Information Function

Recommendations for the management and planning functions are centred around the reporting requirements and effective presentation of information that can be used to aid in the management roles of monitoring and controlling Branch operations and planning for the accommodation of future workloads.

The following recommendations deal with the type of management information required and the availability and presentation of such information.

Types of Management Information

It is recommended that development of an information system include management reporting for the following categories of information:

> (i)   forecasting information that projects tax revenues, workloads, and resource requirements;
>
> (ii)   inventory information that details the extent of workloads currently being experienced in all Branch functions;
>
> (iii) performance information that measures the effectiveness of Branch programmes and operational procedures, the performance of staff, the effectiveness of the automated systems, and the variances from forecasted revenues;

This information should be available for budgeting purposes, evaluating staff training requirements, aiding resource management, and initiating taxpayer information programmes.

Accessibility And Timeliness Of Information

It is recommended that management information be made available on an immediate demand basis. Only exceptional requests should require scheduling of a batch system computer run to provide the desired information.

Accessibility to information for the most part should be through the on-line terminal system and flexibility should be provided in the request procedures and the presentation formats.

Presentation of Management Information

Information should be made available in formats consistent with MBR and ZBB reporting requirements where applicable, in order to eliminate as much as possible the present requirement to manually manipulative information into the required formats. Presentation of information through the on-line system should include graphic capabilities as a means of providing readily comprehendable summary information.

Further Considerations

A comprehensive information system should be planned for, and developed from, the Divisional level and applied downward through the organization. Such an automated system should also be sufficiently separate, in terms of data storage and reporting logic, that it does not jeopardize the daily operational functions of the Branch. Development of the outlined information system should be viewed as a major project which would be implemented in a phased approach over an extended period of time. The described accessibility and presentation techniques should be considered as longer term goals.

5.2   Recommended Systems Environment

Within the perspective of the preceding recommendations
this section addresses the effects on the automated
systems environment and recommends actions necessary to
accomodate the revised operational characteristics.

5.2.1   Data Base Design Evolution

The structural design of the present physical data
bases will not require radical change in order to
accomodate the recommendations in the preceding
sections. The nature of change will be planned
extension rather than wholesale revision and should
lend itself to a phased, step by step, implementation
of enhancements.

Future extensions to the data base structure fall into
the following categories: addition of particular data
items to the existing segments of the main Accounts
data base; retention of data which is presently
overwritten when amendments are actioned to initial
return acceptance and original return billing; addition
of a limited number of low volatile, index type, data
bases; creation of a small number of temporary
"holding" data bases to facilitate on-line interactive
checking of system outputs and to provide audit trails
of file updates; and extension of the present "totals"
data base into what will more accurately be termed an
"information system" data base.

The overall segmentation and data relationships
reflected in the present data base design are sound,
and will provide a good foundation for the extensions
outlined in the following sections.

5.2.1.1 Additional Data Items

It is recommended that the following data items be added to the main Accounts data base.

Effective Dates of Inactivity

The effective date associated with the current status of each corporation should be reflected on the data base file. This is especially important for inactive corporation in order to facilitate the automatic calculation of interest during the billing process, and to provide a reference in other Branch activities.

System Application Dates of Accounting Entries

It is recommended that an additional date be attached to accounting transaction entries stored on the data base file, to reflect the point in time that the entry was processed by the computer system. This date, along with the "true" date of the transaction, will provide benefits by allowing explanations of previous interest calculations to be produced automatically and will facilitate the automatic billing of corporations which are in a double fiscal situation.

Dates Associated With The Consent Process

To accomodate the automation of the consent process for taxpayer initiated removals and reinstatements, it will be necessary to store a date reflecting when the consent will lapse or when the official consent became effective. It may also be necessary to store an indication of the stage of the consent process.

Data To Reduce Manual Tax Calculations

In order to facilitate the automatic calculation of revised taxes in the audit/re-assessment process it will be useful to store taxable income and taxable capital figures for each taxation period.

Indication of the Receipt of Default Returns

For the purpose of indicating receipt of default returns through the on-line system, an additional indicator should be added to the return segment on the data base. This indicator should not interfere with the normal return acceptance rules.

Positive Indication of Correspondence Production

In order to reduce reference to the hard copy files and to verify that correspondence has been sent to the taxpayer, positive indication of all correspondence mailed should be indicated on the data base. The date of production should also be stored. An example where this measure would be useful is in the collection process. Presently, some accounts are bypassed in the collection letter production and, although the data base collection stage information normally reflects correspondence sent to the taxpayer, it does not provide positive assurance.

Additional Address Information

It may become useful in the future to store more than one mailing address for some corporations as a measure to improve taxpayer response in returning computer produced returns and remittance advices.

Amalgamated Account References

The data base file should be extended to store the resultant amalgamated account number for those corporations which, through amalgation, are no longer active.

Extension For FDA Purposes

If the option of capturing extended information for all corporations is adopted as part of the return acceptance procedure, it would be desirable to extend information contained in the main Accounts data base and to eliminate the separate physical FDA data base that presently exists.

5.2.1.2 Retention of Overwritten Data

It is recommended that the following information be retained on the data base file rather that being overwritten.

Assessment and Re-assessment Information

All information reflecting the billing activities of an account should be retained on the data base until it is deleted as a result of the purging scheme outlined in Section 5.2.2 of this report.

Original and Amended Return Information

As with billing information, original and amended return information should not be overwritten on the data base.

Old Names

When a corporation changes its name, the previous name should be retained on the data base and access by old name should be still available through the KWIC index.

5.2.1.3 Index Data Bases

Creation of the following index data bases may be necessary to implement some of the operational environment recommendations.

Other Jurdisdiction Account Number Indices

As interaction with other jurisdictions increases in the future, the creation of account number indices to the main Corporations Tax data base would be beneficial. These indices could accomodate interfaces with Revenue Canada (for federal re-assessment processing and tax roll file matching), with other Revenue Division branches such as Retail Sales Tax and Gasoline Tax, and with the Ministry of Consumer and Commercial Relations.

Collection/Default "Scratch Pad"

To facilitate the recommendation to aid manual collection and default followup actions with the on-line system, it may be necessary to create an index by officer code to the main Accounts data base. This index would have space allowance for manually input memo information and for computer generated notification of receipt of payments or default returns.

Appeals Data Base

It may be desirable to realign the objection and appeal
information from the main Corporations Tax data base
into a separate physical data base to accomodate
autonomous processing and to act as an index into the
main Accounts data base. This would allow independence
of Appeals updating activities and facilitate the
separation of the Appeals monthly reporting system from
Corporations Tax processing.

5.2.1.4 Temporary "Holding" Data Bases

As the use of communications and on-line processing
increases, creation of temporary data bases may be
necessary to facilitate on-line interactive checking
procedures and to provide audit trail information of
on-line updating.

Output Data Bases

In the longer term output data bases may be required to
allow validation of refunds in the direct billing
process and to aid in the completion of manual
assessments and re-assessments through the on-line
system.

Audit Trail Data Bases

To provide audit trails of on-line updating it would be
necessary to record individual actions to the data base
for certain types of update transactions.

Creation of an audit trail "cash book" data base will
be essential to recording on-line updates to account
balances.

5.2.1.5 Information System Data Base

To provide the basis for a comprehensive information system it will be necessary to extend the present "totals" data base concept so as to encompass more information which can be manipulated for management and operational information purposes.

It is recommended that the information system data base be extended to store discrete data items for manipulative purposes and that accumulation of these data items be retained in segments which reflect the processing and reporting time requirements of the Branch.

This information system concept is expanded in Section 5.2.4 of this report.

5.2.2 Data Purging Scheme

This section outlines recommendations for the orderly
purging of information from the data base files. Two
main categories of data are addressed: accounts which
have become inactive and are no longer subject to
normal processing activities; and, older taxation year
data which is outside the statute of limitation
requirements.

Criteria For Purging Inactive Account Information

It is recommended that all corporations which have been
cancelled, undergone bankruptcy proceedings,
surrendered, voluntarily dissolved, or have amalgamated
with other corporations, be removed from the data base.

Under all these circumstances, the account should not
be purged until actions have been taken to render the
balance nil or while there is still some outstanding
condition which requires further administrative
action. It will be desirable to retain all information
for these accounts on the data base file for a short
period of time after the accounts have been deemed
dormant (in order to accomodate unexpected account
activities and to allow for reinstatement possibility),
and also to retain permanent data base reference to the
accounts' identities and period of existence.

For Corporations which have become inactive in Ontario,
but are still active in other jurisdictions (i.e. 'K'
status corporations), an automated letter programme
should be implemented to review periodically their
Ontario tax liability situation.

Criteria For Purging Taxation Year Data

Taxation year data, such as returns, billing information, and transactions, should be aligned together and retained on the data base in their entirety to accord with the statute of limitation rules presently followed in the normal audit procedures. Provisions for auditing old taxation years in the case of fraud should not be reflected in the taxation year data retention criteria.

This would mean that six years of return and billing information, along with the transactions corresponding to those taxation years, would be retained on the data base. The data base would retain a volume of information corresponding to the relative activity of the account within the six year period.

Method of Purging Data

Inactive account and historical taxation year data would be purged on an annual basis by executing a computer program to extract eligible information for secondary storage. The timing of the purging process should coincide with the normal re-organization of the data base files which is required on a periodic basis.

Storage and Reference of Purged Data

Purged data should be retained in IMS format on a tape file for manipulative purposes and also be made available for reference on microfiche files. These files should be retained in accordance with the recommended retention rules for hard copy documents (i.e. twelve years from the time of receipt). The microfiche files should be sequenced by

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'purging run' for deleted inactive accounts and by
'purged year' for deleted taxation year data.

It should be noted that there might be some
circumstances, such as recent reassessment activities
or the receipt of transactions for previously purged
taxation years, which require special consideration for
providing comprehensive and easy reference to the
purged taxation year information on microfiche. In
these cases information pertaining to already purged
taxation years should be stored with subsequent years'
data.

Information Retained On The Data Base

It is recommended that identifying account information
be retained on the data base for all purged inactive
accounts so that positive reference to the existence of
the account is available through the on-line
information retrieval system.

This will involve the retention of name references
in the KWIC index system and retaining minimal
identifying information in the root segment of the main
Accounts data base.

Also included in the retained data base information
should be reference to the correct microfiche file for
both inactive account and taxation year purged data.

Reinstatement Of Purged Accounts

It is desirable when reinstating an account to the
active tax roll to be able to restore to the data base
all information pertaining to the account at the time
of purging.

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It is recommended that the purged data tape files be used as a source of this information if the volume of reinstatments can justify the automation of the account reinstatement procedure.

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5.2.3 Processing Time Schedules

This section summarizes the effects of the operational recommendations on the computer system processing time schedules.

5.2.3.1 Real-Time Processing

As a result of the recommendations, the on-line system will be used in the future to effect transaction updates of the data base for the following inputs:

(i)   statistical types of tax roll changes (e.g. status, jurisdiction, business code, fiscal year end, etc.);

(ii)   address changes;

(iii)   cancellation changes;

(iv)   collection code changes, and collection followup action information;

(v)   some journal entries;

(vi)   objection information;

(vii)   audit code changes;

(viii) indication of the receipt of default returns; and,

(ix)   information associated with the granting of consents of dissolution or reinstatement.

The batch updating system should retain the ability to update the data base for most of those transactions mentioned above, as it does now.

5.2.3.2 Daily Batch Processing

On a daily basis, the higher volume inputs and all inputs captured in the centralized data entry operation would update the data base. These transactions would include: cash and journal entries; returns information; audit selection scoring information; audit worksheet results; and manually completed assessments and re-assessments. Also included would be any other inputs not entered through the on-line system.

5.2.3.3 Weekly Batch Processing

The weekly batch processing system will continue to accomodate all transactions, including those received from the Ministry of Consumer and Commercial Relations (i.e. new companies, name and CCR statistical changes, and cancellation input) as well as scanning all data base accounts for the production of control card generated outputs.

5.2.3.4 Monthly Batch Processing

Monthly batch processing will continue to be scheduled for the production of statistical reporting. For the immediate future this would include the present statistical requirements from the main Accounts data base, and audit performance statistics.

In the longer term, the goal is to replace the requirement for these scheduled statistical runs with an information system which will obviate the need to regularly scan the entire Accounts data base for statistical reporting.

5.2.3.5 Annual Batch Processing

Annual processing activities would include file purging and re-organization activities, as well as calendar and fiscal year end reporting requirements.

5.2.3.6 Considerations of Variable Updating Activities

Associated with on-line and more frequent updating activities are audit trail, output handling, and file backup and recovery considerations.

Audit Trails

There will be a necessity to provide audit trail information for on-line file updates. This is especially important where the updates affect the account balances. It is proposed that audit trails, where necessary, be accomodated through the creation of temporary "holding" data bases that record on-line activities and whose contents can be transferred to "hard copy" storage on a regular basis.

It is not recommended that all on-line updates be recorded in this manner, only those which affect the account balances. It is also important to point out that all data base change activities are logged by the IMS system as part of the normal backup and recovery procedures.

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System Outputs

Production of an output document as the result of
on-line transaction activity is not easily accomodated
unless: an on-line printer is dedicated to the task of
producing the output; or the on-line system provides
transactions to a batch processing system which
subsequently produces the desired output; or a
temporary data base is available to the on-line system
in which to store the output.

For the immediate future it is recommended that those
transactions which generate printed outputs be
processed through the batch processing system, so that
production of outputs can be more easily co-ordinated
and handled.

Outputs produced from the daily batch processing, apart
from run reports, should be accumulated and printed on
a weekly basis.

File Backup and Recovery

For data base updates where the processing cycles are
less that one week, backup and recovery should be
achieved through the IMS logging system. On a weekly
basis it is recommended that a copy of the data bases
be taken to serve as a backup and recovery mechanism.

5.2.4   Information System

The content of this section and the recommendations
proposed within should serve as a guideline for the
future development of a comprehensive information
system.   Section 5.1.6 outlined the reqirements of such
a system from the Corporations Tax Branch viewpoint.
This section outlines requirements in the computer
system environment.

Separate Storage of Information System Data

It is recommended that data which is used primarily as
a base for management and operational control
information be stored separately from data that is used
for the operational processing system.   This will
facilitate ease of access to information system data,
and will minimize the risk of jeopardizing the
operational system.

It is proposed that the information system be built
around a data base which replaces the present "totals"
data base.

Information System Data Gathering

Data to be stored in the "information system" data base
must be gathered as a by-product of the normal
operational system processing activities.   The
manipulation and reporting of this information can be a
discrete subsystem, or can be requested through the
Information Centre in Management Systems Branch.

Characteristics of the Stored Data

The "information system" data base should be made up of discrete data item summaries which can be manipulated in their raw form by inquiry programs for interpretation and presentation. This measure will assure maximum flexibility in meeting inquiry needs.

In addition the storage of data items should accomodate the production of summary information on daily, monthly and yearly time cycles.

Flexibility of System

The information system and the data contained in it should be flexible enough to meet eighty to ninety percent of the management and operational information inquiry needs on an immediate basis.

As a result of this flexibility, the requirement for a scheduled batch statistical run should be eliminated. Only in special circumstances should a scan of the main Accounts data base be necessary to provide required information.

Access and Presentation

Access to, and presentation of, management and operational summary information should be made available through the on-line inquiry system.

Presentation of information should be made as flexible as possible and the presentation techniques should include graphic capabilities for effective presentation of trends and summaries.

5.3 Effects on Policy and Legislation

The following section explores the effects on legislation contained in the Corporations Tax Act, the realignment of processing functions, branch and operational policy considerations, and aspects of staff training that result from the preceding recommendations in this study.

5.3.1 Legislation Considerations

This section examines the consequences of the recommendations for change to the operational environment which affect the legislation governing the administration of the Corporations Tax Act.

Instalment Interest Calculations

A legislative change that obviates the requirement for Corporations Tax branch Accounts section to re-open instalment interest calculations for reassessments resulting in a reduced tax liability would have the benefit of enabling virtually half of the current manual (basic) reassessments to be produced automatically through the computer system.

At present the legislation treats increase reassessments and decrease reassessments differently in regard to the application of interest on the instalment payment requirements of the revised tax payable. Increase reassessments allow the additional instalment interest to be calculated from a fixed date, whereas decrease reassessments require the transactions of the tax year to be re-opened and credit interest to be calculated for each instalment period.

It is proposed that it would be equitable to the taxpayer for decrease reassessments to be treated in the same manner as increase reassessments and for credit interest to be calculated from the final payment date since in both cases, at the time of the instalment payment, the instalment schedule is based on the best available financial estimate of the final tax year liability.

Interest and Penalty Revisions

The penalty and interest provisions of the current legislation have not kept pace with the changing business environment in the private sector and probably contribute significantly to the increasing workload of the Corporations Tax branch's compliance section. It is proposed that the legislation be changed to increase penalties for non filing or late filing of returns, especially for minimum capital tax companies; and that regulations be amended so that interest rates are allowed to match those in effect in the private sector, with revisions on a regular basis.

Statutory Lien Provision

The lien provision of the Corporations Tax Act is an implement to help enforce compliance. It is discriminatory in that it applies only to those companies with property and is effective only at the time of sale of property.
The increasing number of lien clearance requests, in conjunction with the overall policy of constraint, could result in the lien function being a source of irritation to the taxpayer when a timely service cannot be maintained. This, together with the effectiveness of liens relative to other compliance functions, suggests the repeal of the provision in the Act would be of overall benefit to the Corporations Tax branch while conforming with deregulation objectives.

Access To Data Legislation

The increasingly functionalized nature of the Revenue
Division will require Ministry staff outside of the
Corporations Tax branch itself to have access to
Corporations Tax data and electronic files in the normal
execution of their duties. The establishment of Appeals as
a separate branch is an example of this, as is the
centralized Revenue Processing Centre.

It is proposed that legislation currently restricting access
to Corporations Tax information be reviewed so as not to
inhibit normal processing functions within the Division.
Legislation dealing with restricted access to information
should be aimed at the Divisional level, thereby allowing
not only a functional organization but also an interchange
of reference data between individual branch's data
processing systems.

Examination of Returns

It is suggested that the legislation determining the degree
of examination given to a return prior to billing be
amended, if necesssary, to conform with the recommendations
that: automatic scoring for audit selection be implemented
for minimum taxpayers; and, the manual scoring for higher
liability taxpayers be completed after the return has been
billed.

5.3.2 Realignment of Functions

The recommendations outlined in this study will require some realignment of functions performed at the operational level. The functions affected and the degree of realignment required are listed in the following section.

5.3.2.1 Revenue Generation Realignments

The following paragraphs review the resultant realignments within the Revenue Generation function.

Revenue Processing Centre

It is proposed that the data capture of payments received without remittance advices be re-directed from centralized Data Entry to an internal operation within the Revenue Processing Centre deploying an OCR font printer to produce remittance advices that will be forwarded directly to the remittance processing system's OCR equipment.

Tax Return Centre

It is recommended that the Tax Return Centre rather than the Input/Output section undertake the allocation of sequence numbers to returns as soon as they are received. This will also allow the computer system to control the inventory of processed returns by reporting on missing sequence numbers, and will therefore also remove the requirement for fixed volume batching throughout the return acceptance procedures.

A further recommendation proposes that the scoring function for audit selection be separated from the preparation of returns for computer acceptance. This will entail the transfer of some present screening functions to the "dressing" operation, thereby expanding it into a "preparation for return acceptance" function.

It is also recommended that scoring for audit selection be automatic for some 80,000 select accounts, thereby reducing the auditor resource requirement to the manual scoring of the remainder. The manpower thus released can be realigned with the extended audit function.

A proposal consistent with the trend towards data capture at source recommends that changes in non-tax data on the return be captured interactively via the on-line system in the Tax Return Centre, again detracting from the central data entry operation. In this way the Tax Return Centre will also provide a timely service to the Default staff.

Finally a realignment is recommended in that pre-billing tax adjustments be eliminated; responsibility for recovery of any revenue delayed by this move to accelerate return acceptance will be transferred to the post audit function.

Accounts Section

Some realignment of function is recommended in the Accounts Section in that the printing of basic assessments and reassessments will be effected through the computer system for both the delayed billing procedure (whereby the account is repaired for direct billing prior to the printing of a basic bill) and the working copy procedure as in the current system. This will obviate the requirement for the working copy basic bills to be processed through the Word Processing Centre.

It is also recommended that the current paper oriented refund voucher procedure be replaced by an automated cheque requisition system which will result in the elimination of both voucher checking by the Accounts Section and the manual data capture of voucher information by the Government Payments Branch of the Ministry of Government Services.

In the longer term the creation of a Corporations Tax Branch-wide information service would encompass some of the activities of the Inquiry function of the Accounts section.

Tax Roll

The recommendations include a realignment in the method of data capture for tax roll changes, away from the central data entry service to an on-line updating capability.

By reducing the time spent on maintaining the tax roll the recommendations will enable more manpower emphasis to be directed towards investigations in the Tax Roll section.

Finally there will be a realignment in the cancellation programme where the emphasis will be transferred more towards the compliance function of Corporations Tax Branch.

5.3.2.2 Revenue Control Realignments

The following section examines the recommended realignments within the Revenue Control function.

Compliance Unit Realignment

For both the Collections and Default units a realignment of function will result from the recommendation to accelerate the cancellation programme as a more visible and effective compliance tool in following up the initial collection and default actions.

In the longer term the establishment of a Division level compliance agency is promoted as a realignment to achieve a more effective and co-ordinated approach to enforcing joint compliance actions.

Liens Realignment

It is also recommended that there be a realignment of the Liens efforts into the other Revenue Control functions in a proactive attempt to reduce the Corporations Tax accounts receivable and to remove a potential cause of taxpayer irritation if service levels are forced to drop.

Audit Realignment

The recommendations affecting the Audit function centre around the alignment of the auditor and group clerk efforts away from transposition of data, support, and administrative activities, toward the prime function of extended auditing. The on-line cancellation of nil potential audit worksheets will reduce the dependency of the Audit section on the Input/Output unit.

In the longer term the establishment of a Branch-wide information service, as promoted in the recommendations, will reduce the telephone interruptions to the Audit section.

Tax Roll Investigations Realignment

A realignment of activity is proposed in the Tax Roll area
away from tax roll maintenance, which will be partly
undertaken by the Tax Return Centre, toward Investigations
activity. This will be achieved through less followup
required for new companies, more matching against third
party data sources, and an automated "K" status programme.

5.3.2.3 Appeals Realignment

The recommendations advocate a realignment in the Appeals
function away from dependence on the Corporations Tax
computer system, Input/Output section, and data entry
support, towards a more autonomous operation by means of
on-line updating and retrieval of Appeals data. There will
remain some reliance on the Corporations Tax filing room.

5.3.3 Effects on Branch Policy

The recommendations proposed in this report affect the Corporations Tax Branch both specifically by operational function and also in terms of overall policy direction. The following section examines the effects on the operational policies within the branch and the effects on directional policy in terms of the general objectives that the branch wishes to attain.

5.3.3.1 Effects on Operational Policies

The following section reviews the recommendations in terms of their effects on the major operational functions of Corporations Tax.

Returns Processing Policy

The recommendations affecting returns processing require a committment to: a fastpath method of processing minimum tax returns with a tax liability of $100 (or less) and gross revenue under $25,000; an adherence to the self assessing principle for initial billing with the associated elimination of pre-billing tax adjustments; and a discrete, automated audit selection scoring method for minimum tax corporations with a longer term option of extending the automated scoring principle to all corporations.

Refunds Policy

The effect of the recommendations on refund processing is to reduce the amount of manual checking performed on refunds by adopting the policy of considering the approval of the refund (code 4) turnaround document as the only stage of approval required for the refund issuance itself.

Assessment/Reassessment Policy

The main policy changes affecting the assessment function
are: the current policy of producing basic bills for
accounts where missing data prevent direct billing will be
replaced by the delayed billing concept (which involves
repairing, prior to the subsequent billing run, those
accounts which could be directly billed); the policy of
matching both assessment and reassessment bills produced in
the same run will become obsolete, and therefore eliminated,
as the billing function becomes more real-time oriented; the
current policy of producing basic bills because they need to
be intercepted and approved by some branch function will
change to the policy of routing specially coded direct bills
to the appropriate function without the need for manual
processing.

For reassessments, the main policy change will involve the
concept of not re-opening the tax years for instalment
interest calculations in the case of credit reassessments,
and will endorse treating both debit and credit
reassessments identically.

Compliance Policy

The general theme of recommendations which will affect the
compliance function reflect a more positive and effective
policy approach to this important operation: that an
accelerated cancellation programme be implemented to support
the main collection and default efforts; that a policy be
endorsed of applying current payments to arrears after due
notice is given, regardless of the taxpayer intent for such
payments; that both collection and default operations
continue a selective manual approach enhanced by a
complementary computer system that also offers a new feature
in returns processing for notifying the Default unit of the
receipt of a default return; that the penalties and interest
provisions of the Act be updated to match the private sector
in an effort to reduce the volume of accounts undergoing
compliance action; and that arbitrary assessments be
calculated for some corporations where it is felt such an
action would be beneficial to the Branch.

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Audit Policy

The recommendations affecting the Audit function are con-
cerned primarily with the policy of allowing the auditors to
spend as much time as possible on their prime function:
that the performance statistics are gathered as part of the
computer system without a high volume of paperwork; and that
a policy of automated reassessment billing for amended and
loss carry back returns will reduce non-discretionary audit
activities and adhere to the principles of self assessment.

5.3.3.2 Effects on Overall Directional Policy

The following section attempts to highlight the areas
affected by the recommendations as they apply to the
direction the Corporations Tax Branch is taking.

Data Entry Policy

The overall theme for data entry is to reduce the labour
intensity as much as possible and to achieve this through:
the increased use of Optional Character Recognition
equipment to capture turnaround documents; and the pursuit
of the Data Entry at Source concept, whereby transactions
are entered in a decentralized operation.

Filing Policy

Although the study does not directly address the filing
operation, the filing policy assumes an important position
in the operation of the Branch. It is therefore recommended
that, until the evolution of technology provides a viable
alternative to the current labour intensive, inadequate,
hard copy filing methodology, an interim solution be
implemented that automatically controls file charge-outs,
eliminates the filing of computer issued correspondence, and
utilizes a colour-coded identification of the account number
on each file folder.

Appeals Policy

The discrete operation of the Appeals branch as a separate
function coincides with the recommendation that Appeals
operates in a more autonomous way through its own terminal
and computer support system.

Liens Policy

The recommendation dealing with the Liens function recog-
nizes the growing workload of Liens and the potential
frustration to taxpayers: the repeal of the statutory lien
is recommended as the best solution until the land
registration system can more easily accommodate the claiming
of a lien for compliance purposes.

FDA Policy

The FDA function does not fulfill a critical operation for
Corporations Tax Branch: with this in mind it is recom-
mended that the function be suspended, or that it be funded
by the requesting agency through a policy of charge-back for
services provided by the FDA unit.

Accounting System Policy

The legislation determines prepayment of taxes in the
current year and the recommendatons endorse the position of
maintaining the present basic accounting approach by tax
year. However the shortcomings of the current system can be
overcome in other ways of presentation and formatting, as
well as proactive public relations programmes reinforcing
the requirements of the Corporations Tax Act.

Finally the discretionary allocation of payments to arrears
will help overcome the problems of the current accounting
approach as it applies to those corporations which do not
adhere to the normal tax payment schedule.

Management Information Policy

The recommendation calls for a policy committment to an
information system concept whereby the normal management and
operational control requirements are met by a more timely
and comprehensive display of information, optionally in
graphic form.

5.3.4   Training Requirements

This section reviews the training requirements resulting
from the recommendations affecting the operational
environment of Corporations Tax and comments on the general
training structure and aids for operational and supervisory
staff in the future.

5.3.4.1   Training for the Operational Environment

The recommendations to improve the major functions of the
branch rely heavily on the concept of data capture at source
to reduce the number of job steps and batch associated
paperwork.

The resultant real-time updating environment will require
that all operational personnel be familiar with interactive
procedures with the computer system, have keyboard skills,
and are trained to uphold the data integrity of the data
base.

Revenue Processing Centre

The recommendation that all remittance data be captured via
one operational stream that utilizes Optical Character
Recognition techniques will require that the staff in the
Revenue Processing Centre be trained in both the enhanced
allocation procedures and the use of the printer terminal to
produce substitute CTR documents.

Tax Return Centre

The expanded role of the dressing function will require that
training be given for the "preparation of return acceptance"
function since it will include some of the present screening
activities. Also training will be necessary to execute
on-line updating for non tax changes for both fastpath and
extended returns processing.

Accounts

In addition to the training required for on-line entry of
journal transactions, the Inquiries area of Accounts will
receive instruction in using the on-line system to produce
interest calculations and statements of account without
recourse to the Word Processing Centre service.

Tax Roll Section

Tax Roll personnel will receive training on using the
on-line system to make tax roll changes to the data base in
a manner similar to the updating procedures recommended for
the non-tax data changes in the Tax Return Centre.

Audit Section

Training requirements for the Audit section result from the
recommendations to cancel nil potential audit worksheets
through the on-line system, bypassing the Input/Output
section.

In addition, the realignment of audit emphasis to extended
auditing might result in further training of an audit
nature.

Appeals Branch

The autonomous operation of the Appeals function recommended
in this study will require a comprehensive training
programme for Appeals staff in all aspects of on-line
updating, information retrieval, and batch mode Appeals
performance systems .

5.3.4.2 General Training Structure and Aids

To reinforce steps in an operation, the objective of a
function, or the purpose of the Branch, it would be
beneficial to capitalize on the trend toward computer based
instruction and undertake a training programme that staff
can refer to when necessary and that can be utilized to
train new staff in an interactive environment.

The disposition and definition of data would also be useful
to aid communication within the Branch and to ensure maximum
understanding of the staff in the execution of their duties.
This can be achieved by a branch committment to a data
dictionary/directory to assist in the control of the data
resource, and to facilitate the necessary training
requirements for branch members.

5.4   Interfaces with Other Branches and Agencies

Throughout this study it is suggesthat that there will be not only an increasing amount of data exchange with existing interfaces but also an extended number of interfaces to other sources of data.

This section reviews both aspects of the interfaces that Corporations Tax Branch will experience with implementing the recommendations of this study.

5.4.1   Information and Communication Requirements

This section examines the expansion of existing interfaces to meet the information and communication requirements of the Corporations Tax system.

Consumer and Commercial Relations

It is recommended that Corporations Tax pursue a policy of increased co-operation with the Ministry of Consumer and Commercial Relations to capture more profile data of a new company at the time of incorporation, and thereby reduce the Tax Roll followup questionnaire activity.

In addition it is proposed that the cancellation programme, administered by the Ministry of Consumer and Commercial Relations, be accelerated to assist in the compliance function of Corporations Tax Branch. This will put new demands on MCCR and on Government Services to print the expected increased number of potential cancellations in the Ontario Gazette.

Ministry of Government Services

In addition to the interface with the Ministry of Government Services for the cancellation programme support mentioned above, Corporations Tax will provide the Governments Payment Branch with a cheque requisition tape for its automated refund system.

There will also be an increasing communication interface
with the data cenres in support of the recommendations to
implement on-line updating for many Corporations Tax
functions.

Revenue Canada

It is recommended that the data resource possessed by the
Federal Government for Ontario related corporations should
be exploited through increased interface with Revenue Canada
to improve the federal reassessment information and thereby
reduce the allocation of auditor time to non-discretionary
audit activity. Also beneficial would be the confirmation
of the Ontario tax roll, especially in relation to Dominion
corporations or the "K" status programme, by matching
against federally supplied tax roll tapes on a regular
basis.

In return Corporations Tax Branch will improve its interface
with Revenue Canada in passing advisement of cancellation
information on magnetic tapes to the federal agency.

Appeals

The creation of the Appeals function as a separate branch
and the recommendation that the computer system should
reflect this autonomy will increase the interface network of
the Corporations Tax system.

Financial Data Analysis

The elimination of FDA will reduce the data interface with
other Ontario agencies and with other branches within the
Revenue Division. If the programme is allowed to remain,
however, an interface should be established whereby the
costs of the operation are journalled to the requesting
agency.

5.4.2   Recommended Communication Interfaces

This section reviews the communication interfaces suggested in the recommendations of this study.

Other Revenue Division Branches

It is proposed that increased co-operation be fostered with other branches within the Revenue Division to supply information that might be of use to Corporations Tax, especially in its Compliance Section. Such interfaces would include Retail Sales Tax and Gasoline Tax branches via the IMS data base systems.

Other Interfaces

Recommendations contained in this report refer to other sources of data such as the Dun and Bradstreet files for select information, and the use of the data base of the Ministry of Transportation and Communications for address information in particular.

In the longer term interfaces could exist with the commercial banks to facilitate the payment of instalments and final payments to Corporations Tax Branch through the Revenue Processing Centre.

To minimize the effects of increased interface activities it is recommended that electronic transfer techniques be used wherever possible.